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Renewable Resource Grant
and Loan Program

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and Conservation
Conservation and Resource
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Renewable Resource Grant and Loan Program

Project Evaluations and Funding Recommendations
For the 2007 Biennium

and

2005 Biennium Status Report

Prepared by the

Montana
Department of Natural Resources
And Conservation

January 2005

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LIST OF ABBREVIATIONS

BOD	biological oxygen demand
CD	Conservation District
CDBG	Community Development Block Grant Program
cfs	cubic feet per second
CIP	capital improvements plan
CO ₂	carbon dioxide
DEQ	Montana Department of Environmental Quality
DFWP	Montana Department of Fish, Wildlife and Parks
DNRC	Montana Department of Natural Resources and Conservation
DOC	Montana Department of Commerce
DOT	Montana Department of Transportation
EPA	U.S. Environmental Protection Agency
EQIP	Environmental Quality Incentive Program
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
GIS	geographic information system
gcpd	gallons per capita per day
gpm	gallons per minute
GWUDISW	groundwater under the direct influence of surface water
JBOC	Joint Board of Control
JRWC	Jefferson River Watershed Council
kwh	kilowatt-hours
LYIPBOC	Lower Yellowstone Irrigation Project Board of Control
MBMG	Montana Bureau of Mines and Geology
MCA	Montana Code Annotated
MCL	Maximum Containment Level
MRWS	Montana Rural Water Systems, Inc.
MSU	Montana State University
NCAT	National Center for Appropriate Technology
NFIP	National Flood Insurance Program
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service, U.S. Department of Agriculture
O&M	Operation and Maintenance
PER	preliminary engineering report
POU	point-of-use
ppb	parts per billion
PVC	polyvinylchloride
RD	Rural Development
RFP	request for proposal
RRGL	Renewable Resources Grant and Loan Program
SDWA	Safe Drinking Water Act
STAG	State and Tribal Assistance Grant, EPA
STEP	septic tank effluent pump
SWPB	State Water Projects Bureau, DNRC
TDS	total dissolved solids
TMDL	Total Maximum Daily Load
TSEP	Treasure State Endowment Program
TSS	total suspended solids
USBR	U.S. Bureau of Reclamation, Department of the Interior
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UV	ultraviolet
WRDA	Water Development Resources Act, USDA
WSD	Water and Sewer District
YID	Yellowstone Irrigation District

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INTRODUCTION

The Renewable Resource Grant and Loan Program provides funding for projects that conserve, manage, develop, or preserve the beneficial use of renewable resources. Governmental entities may apply to the program to obtain funding for resource-related projects. Past projects have included the construction of municipal water and sewer systems, irrigation system rehabilitation, reforestation, watershed restoration, resource studies, and engineering and feasibility studies for construction projects. Applications are due May 15 of each even-numbered year. Montana Department of Natural Resources and Conservation (DNRC) staff reviews and ranks proposals from public entities and then presents a list of projects recommended for funding to the legislature during the regular legislative session. Recommendations for the 2005 legislative session are contained in the report.

This biennium, grants of up to \$10,000 each were available to fund project planning for the development of renewable resource projects. Applications that satisfied project and applicant eligibility criteria were funded on a first come, first serve basis.

Private entities are also eligible for both grant and loan funding for water-related projects under the Renewable Grant and Loan Program. Montana's constitution prohibits the legislature from appropriating funds directly to private entities. Therefore, selection of projects occurs under a different process that involves review by DNRC staff and final approval by DNRC's director. Loan applications from private entities may be submitted anytime during the biennium. Private grants for water resource development or improvements are limited to \$5,000 or 25 percent of the project's cost, whichever is less.

CHAPTER I

The Renewable Resource Grant and Loan Program

Background

The former Renewable Resource Development Program was established by the legislature in 1975 to promote the development of our renewable resources. Funds generated by the use of non-renewable mineral resources were pledged toward the development of more sustainable resource-based industries. Only governmental entities were eligible to apply for funding. Funds were provided for the purchase, lease, planning, design, construction, or rehabilitation of projects that conserved, managed, developed, or preserved land, water, fish, wildlife, recreation, and other renewable natural resources.

The former Water Development Program was established by the Montana Legislature in 1981 to promote and advance the beneficial use of water, and to allow Montana's citizens full use of the state's water by providing grants and loans for water development projects and activities. Under the Water Development Program, both governmental entities and private persons were eligible to apply for funding.

In 1993, the Renewable Resource Development Program was combined with the Title 85 Water Development Program. DNRC's role under Title 85 was expanded to provide for DNRC's coordination of the development of the state's renewable resources. The Resource Development Bureau of DNRC thus assumed the responsibility for administering the Renewable Resource Grant and Loan Program as stipulated under Title 85, part 6, Montana Code Annotated (MCA). Combining the two programs streamlined program administration but did not change applicant and project eligibility criteria.

Purpose

The purpose of the Renewable Resource Grant and Loan program is to further the state's policies, set forth in Section 85-1-101, MCA, regarding the conservation, development, and beneficial use of renewable resources. The goal of the program is to invest in renewable natural resource projects that will preserve for the citizens of Montana the economic and other benefits of the state's natural heritage.

Project and Applicant Eligibility

Grants and loans are available for projects that conserve, manage, develop, or preserve the state's water, land, vegetation, fish, wildlife, recreation, and other renewable resources. The majority of projects funded under this program are water resource projects, but forestry, soil conservation, and solid waste projects have received funding in the past. Project funding is available for construction, research, design, demonstration, and planning. Watershed projects that preserve and improve water quality, and projects that help plan for the future management and protection of water sources (such as groundwater assessment studies) have received funding in the past. Chapter VI of this report provides more examples of previous public grants and projects funded by the legislature.

Private Entities

Funding is also available to private entities. These applicants include individuals, associations, partnerships, for-profit corporations, and not-for-profit corporations. Funding for private grant projects is limited. In 2001, the legislature appropriated \$100,000 for grants to private entities. The 2003 Legislature did not appropriate any funds for private grants. By law, grant funding for a single project may not exceed 25 percent of the total estimated cost, or \$5,000, whichever is less. Statute provides that grants and loans may be made to private entities for water-related projects that conserve, manage, use, develop, or preserve the state's water. Only water-related projects may be funded. They must have quantifiable benefits that will exceed costs. Projects must also provide public benefits in addition to any private benefits. Applicants must hold or be able to acquire all necessary lands other than public lands and interests in the lands and water rights necessary for the construction, operation, and maintenance of the project.

Private grant and loan applications are managed under a process separate from state and local government entities. Montana's constitution prohibits the legislature from appropriating funds to a private entity directly. Therefore, funds appropriated by the legislature are used to issue individual awards to private grantees. Criteria for the award of funds to private entities are specified in the law. Each application is reviewed and, based on statutory criteria, funding recommendations are made to DNRC's director. The director has final authority over grants to private entities.

Irrigation system improvement projects, such as the conversion from flood irrigation to sprinkler irrigation, are the most common type of projects funded through private loans. Projects to convert to gravity flow irrigation systems are another typical project. Loans have also been provided for the development and improvement of rural water supply systems. Chapter IV of this report provides more examples of previously funded private loan projects. Private loans must be secured with real property. Projects that are not water-related or that are unable to provide real property to secure a loan have not been funded. Irrigation water users associations have applied for loans in the past but have not qualified for funding because the association had no common property that could be offered as security.

Loans are made only to private applicants who are credit worthy and able and willing to enter into a contract for a loan repayment.

Emergency Grants

Statute allows DNRC to request up to 10 percent of the funds available for grants in a biennium to use for emergency grants. DNRC may provide grant funds for up to \$30,000 for a total of \$125,000 to governmental entities to resolve water-related emergencies. Emergency funds may be granted for projects which if delayed until the next regular legislative session would result in substantial damages or legal liability. Requests for emergency funds are reviewed by DNRC staff and approved by DNRC's director. Chapter V of this report provides information about the applications for emergency assistance received in 2003 and 2004.

Funding Limitations

The law does not impose specific limitations on the amount of grant funding that the legislature may provide for renewable resource projects proposed by governmental entities. Grant recommendations presented to the Long Range Planning Subcommittee by DNRC are for limited amounts. These limits are consistent with limits imposed by the legislature in the past and have been imposed to obtain optimal public benefit from the investment of public funds. Guidelines used to develop funding recommendations were developed with input from the Long Range Planning subcommittee. Proposed funding levels do not constrain the legislature's ability to appropriate grants and loans in amounts deemed appropriate based on testimony presented in legislative hearings and consistent with current legislative priorities.

Grants to private entities are limited by law to 25 percent of the project cost. Loans to private entities may not exceed the lesser of \$200,000 or 80 percent of the fair market value of the security given for the project.

Funding Authority

A total of \$4 million was available over the 2005 biennium for grants to public entities for renewable resource projects. Of this amount, \$100,000 was available for grants to assist public entities in the planning and design of projects eligible for funding under the RRGL program. The loan program is funded through the issuance of general obligation and coal severance tax bonds.

Program Implementation

Part 6 of Title 85 specifies DNRC's role in the management of the Renewable Resource Grant and Loan Program. 85-1-605, MCA, allows DNRC to make project-funding recommendations only. The legislature approves by appropriation the actual awards of those grants and loans to governmental entities that it finds consistent with the policies and purposes of the program. In presenting recommendations to the legislature, DNRC provides information about each project for legislative consideration. All public grant projects are ranked by DNRC to show the legislature the potential value of a given project compared to all of the other grant projects requesting funds. Grant projects that do not meet minimum technical and financial standards are not recommended by DNRC for funding. All recommendations made by DNRC may be rejected by the

legislature in favor of other considerations that it holds as higher priorities. Once the legislature makes an award, DNRC manages the authorized grants and loans according to conditions set out in DNRC's report to the legislature and in the legislative appropriations bill.

Acting within the limits of the authority provided by statute, DNRC provides the staffing necessary to administer state and local government assistance rendered under the Renewable Resource Grant and Loan Program. Each legislative session, members of the Long Range Planning subcommittee review the funding recommendations provided by DNRC. In response, the committee provides DNRC direction for the future.

Statute clearly prescribes DNRC's role in the administration of grants and loans to private entities. 85-1-606-614, MCA, is specific with respect to the parameters for the award of these funds. DNRC is directed to publicize statutes and rules governing these grants and loans and to set application deadlines. Only water-related projects are eligible. Additional eligibility criteria and the criteria used for project evaluation are set out in 85-1-609 and 610, MCA.

Rule-Making Authority

DNRC's role of administering the Renewable Resource Grant and Loan Program is limited to a coordinating role. Limited by its authority to adopt rules, DNRC cannot expand or limit the mission of the Renewable Resource Grant and Loan Program beyond legislative intent. DNRC does not have the authority to limit the amount of public grants or to narrow the range of eligible grants based on DNRC priorities. Title 85, MCA, directs DNRC to adopt rules that prescribe the application fee and content for grant and loan applications. DNRC also determines the ranking criteria used to evaluate and prioritize public grant applications and the process for awarding grants and loans to private entities according to statutory criteria. DNRC authority provides for the servicing of loans and determination of the terms and conditions for making grants and loans.

Program Goals

DNRC's goals for administering the Renewable Resource Grant and Loan Program are carried out through the solicitation of applications; the evaluation of applications to provide the legislature with a basis for the selection of projects that best support the purposes and stipulations of Title 85, MCA; and the administration of grants and loans to comply with the conditions of the authorization and applicable laws.

DNRC seeks to:

1. Inform the public and private sectors that grant and loan funding for water and other renewable resource projects is available, that certain applicant eligibility criteria for obtaining funds exist, and that projects that meet the purposes of Title 85, MCA, qualify for funding. To promote the program, DNRC provides specific information:
 - a. about the grant and loan program to state and local government entities that are most likely to sponsor projects eligible for funding. Information is provided through press releases, news articles, brochures mailed directly to potential applicants, and workshops held in communities across the state.
 - b. to targeted private entities to obtain applications for grant funds that will result in significant public benefit. Information is provided through press releases, news articles, and direct contact.
2. Coordinate with other state and federal agencies to provide information about government funding sources for water and other renewable resource projects, to facilitate a uniform application process, and to award funds without duplication.
3. Solicit public comment and suggestions for improvements to the program through the administrative rule-making and legislative processes, during the solicitation for grant applications, and throughout the review of projects for funding.
4. Evaluate grant projects on the basis of technical merit and the resource benefits established in statute.

5. Effectively administer grants and loans to ensure that funds are used for allowable costs and that projects are executed in accordance with any conditions set by the legislature and in compliance with Title 85, MCA, and other applicable laws without undue burden to the recipient.
6. Offer loans at the most affordable rates available through the sale of public bonds.
7. Adequately secure loans to protect the investment of public funds.
8. Advise the legislature concerning DNRC's efforts to effectively administer the program according to statute and legislative intent.

CHAPTER II

Renewable Resource Grants to Public Entities

Application Administration and Project Review Procedures

DNRC's Resource Development Bureau accepts applications for public grants and loans that are submitted or postmarked by May 15 of each even-numbered year. A \$250 application fee is required with each application. Exceptions are made for organizations that also provide voluntary expert review of DNRC grant applications. Those state agencies and units of the university system or other organizations that contribute to DNRC's extensive grant review process may request an application fee waiver.

Project Solicitation

Project applications are solicited broadly because DNRC seeks to maintain the competitive nature of the program. Those projects that most closely meet statutory priorities rank the highest and are most likely to rank above the cut-off point for available funding. Projects that do not rank competitively and fall below the projected funding line are less likely to receive legislative approval.

An extensive mailing list is used to promote the program and to solicit applications from eligible applicants. Mailing lists were originally obtained from divisions within DNRC and other state agencies. Included are contacts from the university system, state agencies, municipalities, environmental organizations, water users associations, irrigation districts, water and sewer districts, tribal leaders, conservation districts, and federal agencies.

Promotion for the 2004 application cycle began with press releases in February. The press releases were sent to all Montana daily newspapers and provided general program information, a telephone number, e-mail address, and address to request more information and application forms and guidelines.

Sixty-three applications were received for this cycle. The requests totaled \$5.5 million in grant funding. In the previous cycle, 73 applicants requested \$7.1 million in grant funding.

The application for this cycle requested the following information:

- A proposal abstract describing the project's merits.
- A technical narrative to describe the proposal's purpose, project history, and prior efforts; specific goals and objectives are provided, as well as a discussion of project alternatives. Technical documentation is requested to support the technical narrative.
- A financial narrative and budget forms describing the funding structure.
- Affordability data, used to evaluate the local financial commitment and ability to pay of applicants that have the potential to generate revenue through fees or taxes.
- A project management plan which outlines the steps that will be made to ensure successful project implementation.
- A discussion of the public and natural resource benefits achieved by the proposed project.
- An environmental checklist that provides information necessary to assess the extent of any adverse environmental impacts that may occur as a result of the project.

Application Review

All applications received by the deadline are evaluated for completeness. Those missing documentation, application fees, or other basic requirements are notified and provided time to submit additional material. Applications are then distributed to a team of key reviewers for evaluation. **Figure 1** shows the flow of the grant application review and ranking process.

To review applications for the 2004 cycle, DNRC assembled a technical review team of 14 key reviewers. Key reviewers include staff from other divisions within DNRC and contracted private engineering firms. Each key reviewer was asked to coordinate the review of four to six projects. Projects are assigned to reviewers

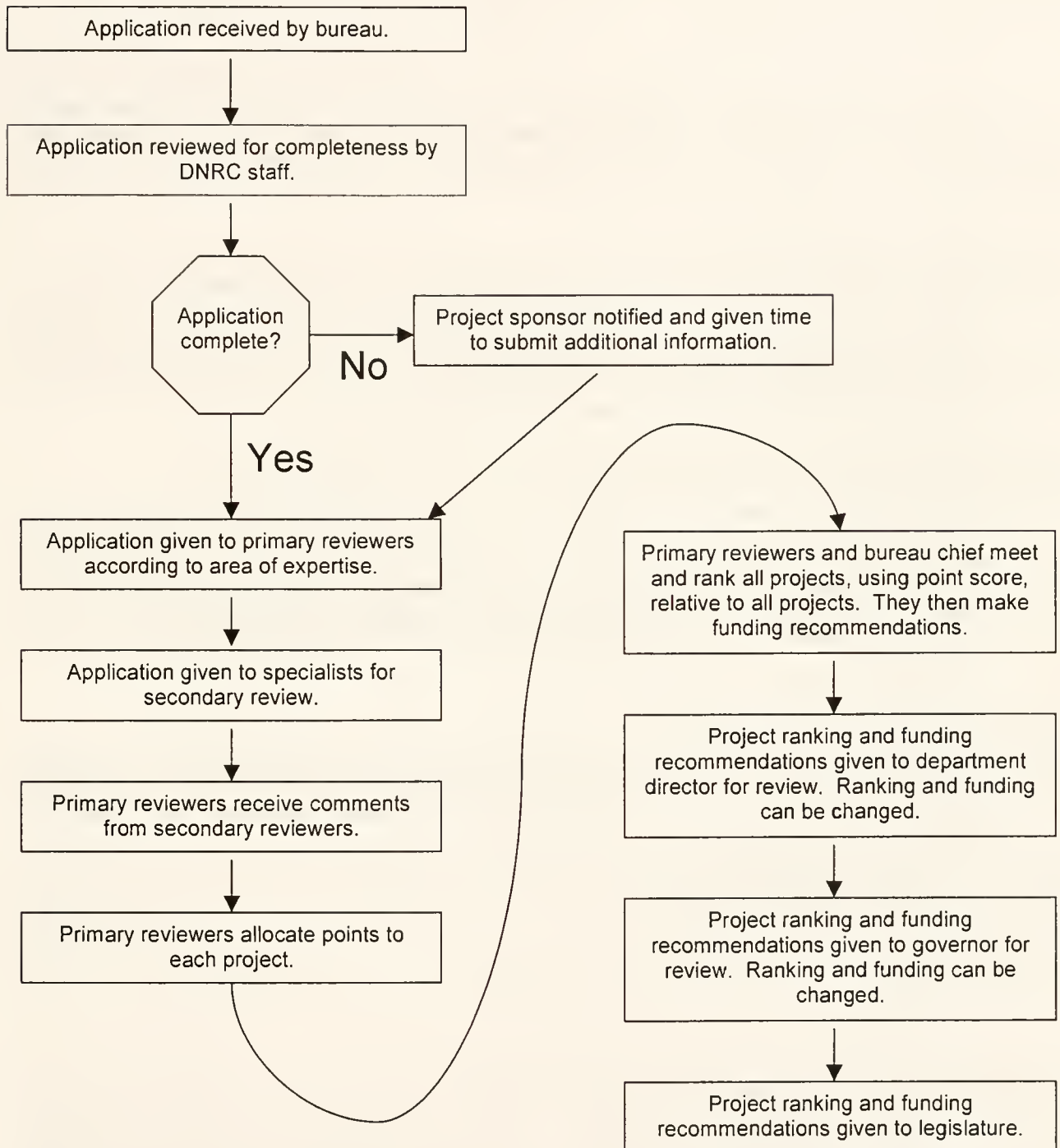
based on the reviewer's area of expertise. Key reviewers are given information about the program, application materials, and guidelines for reviewing applications.

DNRC's technical review team evaluates each application to ensure that the proposal is technically and financially feasible. During project review, additional detailed technical and financial information may be requested if necessary. With the results of their own evaluations and comments from agencies and outside experts, key reviewers assess and document the merits of each proposal based on standard review criteria outlined in the ranking form.

Each project is evaluated for the potential to cause adverse environmental impacts. In the event that long-term environmental impacts could occur as a result of the project, contingencies are attached to the funding recommendations to minimize impacts and to ensure that appropriate steps are taken to protect the environment.

State law requires DNRC to solicit views of interested and affected parties. Local, state, and federal agencies, environmental groups, private organizations, and universities are solicited for input during the technical review of applications. Guidelines, developed specifically for application review, are used to provide a consistent basis for reviewing applications.

FIGURE 1 **Flowchart of Grant Application Review and Ranking Process**



Project Ranking Criteria

To obtain an objective evaluation of all applications, DNRC developed a standard ranking form containing review instructions and guidelines. Each key reviewer completes a ranking form for each application to document the merits of the proposal and the resulting score.

Each key reviewer assigns a score to reflect project merit under the following five primary categories:

1. Financial Feasibility (-100 points)

Financial feasibility is determined based on information included in the application. DNRC evaluates the financial feasibility of the proposed project or study based on the budget submitted with the application, the affordability of the project to the users, and the feasibility of the proposed funding scenario. Deficiencies in the financial plan are determined and could result in the loss of up to 100 points.

2. Adverse Environmental Impact (-100 points)

Each application includes an environmental evaluation prepared by the applicant or its consultant. In the case of public facility project applications, the environmental evaluation is part of the Uniform Application and is reflected in the Preliminary Engineering Report. Short-term impacts, including temporary construction impacts, should be addressed as well as long-term impacts, both positive and negative. Inadequately evaluating environmental impacts, or selecting alternatives which will result in adverse environmental impacts, could result in the loss of up to 100 points.

3. Project Management and Implementation (-100 points)

Each application includes a project management and implementation plan. DNRC evaluates the plan to determine the adequacy of the applicant to manage or provide for the management of the proposed project, including records management and grant and loan administration. Specific areas that will be evaluated include staffing and coordination, public involvement, and contract management (including the management of all grant agreements), contracts with consultants, and construction contracts. Deficiencies in project management and implementation could result in the loss of up to 100 points.

4. Technical Feasibility (400 points)

Outlines are included in the application guidelines for the Technical Narrative or, in the case of public facility projects, the Preliminary Engineering Report (PER). To facilitate the review of the Technical Narrative or PER, it is recommended that these outlines be followed in preparing the application. Each application is evaluated on the basis of the following criteria:

- A. Compliance with the prescribed outline and required information;
- B. Adequacy of the alternative analysis;
- C. Adequacy of cost estimates for potential alternatives and the preferred alternative;
- D. Soundness of the basis used in selecting the preferred alternative;
- E. Feasibility of the project's implementation schedule; and
- F. The quality of supporting technical data submitted with the application. The Technical Narrative or, in the case of a public facility project application, Preliminary Engineering Report provide DNRC with the information used to evaluate the technical feasibility of the proposed project and could result in the award of up to 400 points.

5. Resource and Citizen Benefits (600 Points)

As stated in 85-1-601, MCA, the purpose of the Renewable Resource Grant and Loan Program is to further the state's policies set forth in 85-1-101, MCA regarding the conservation, development, and beneficial use of water resources and to invest in renewable natural resource projects that will preserve for the citizens of Montana the economic and other benefits of the state's natural heritage. Resource and citizen benefits of proposed projects are evaluated by DNRC and could result in the award of up to 600 points. Resource and citizen benefits associated with each application are evaluated on the basis of the following criteria:

A. Renewable Resource Benefits

- 1) **Resource conservation.** Will the project ensure measurable future renewable resource benefits through the implementation of new or improved efficiencies and utilization practices? Will it improve water-use efficiency through the installation of new or improved water meters or other measuring devices?
- 2) **Resource development.** Will the project provide new benefits or enhance existing benefits through the development of a renewable resource? Will it support the development of state, tribal, or federal water projects including regional water systems? Will it develop off-stream or tributary water storage or develop hydropower?
- 3) **Resource management.** Will the project improve the measurable benefits of a renewable resource through better stewardship or other improved use of the resources?
- 4) **Resource preservation.** Will the project protect and thereby preserve the existing quality of a renewable resource? Will it reduce agricultural chemical use or prevent point sources of pollution?

B. Citizen Benefits and Public Support

- 1) **Multiple uses.** Will the project provide or enhance natural resource based recreation? Will it enhance Montana's fisheries or wildlife habitat?
- 2) **New and permanent jobs.** Will the project directly result in new permanent jobs?
- 3) **Public support.** Does the application include documented public support? Does the application contain letters of support? Have citizen groups (e.g., watershed councils, sportsmen groups, development councils) enlisted support for the project? Have public meetings been held (attach attendance lists)?

After each key reviewer determines the score for assigned projects, all of the key reviewers and the bureau chief meet to discuss the projects and scores proposed. During this process, the key reviewer gives a short presentation about each project reviewed and the score given. After all the projects are presented, the individual scores for each category on the scoring sheet are discussed. The team then decides the scores each project should receive in relation to all projects. Discussion by the team reduces inconsistencies between scores given by individual reviewers. Final team scores are recorded on a ranking spreadsheet to document the ranking process.

DNRC's ranking system is used to determine the relative merit of every proposal submitted for grant funding. Ranking scores are used as a guide for the staff to select projects that best serve the program's objectives as stipulated by statute and to summarize information for DNRC's director. Proposal recommendations are presented to the Governor for grant funding in the order DNRC staff ranks them. Ranking scores are not binding. Either DNRC's director or the Governor may make any adjustments to the recommendations prepared by DNRC deemed necessary to reflect their assessment of natural resource and other policy priorities. Based on the Governor's priorities, an appropriations bill is drafted and introduced to the legislature. Actual funding decisions are made by the legislature. Not bound by DNRC's review criteria or the Governor's final ranking, the legislature ultimately will authorize funding for the projects in the order of priority and in the amounts that it judges will best serve the state.

Funding Recommendations

All feasible grant requests are ranked according to standard criteria to select those that most efficiently use the state's natural resources in accordance with statutory guidelines. Then, in conjunction with its recommendation for funding priority, DNRC makes its recommendations concerning the amount of funding to be awarded each project (see **Figure 2**). The 2004 grant applications recommended for funding during the 2007 biennium are illustrated by project type in **Figure 3**.

With the Governor's approval, final funding recommendations are presented to the legislature as part of this report. These recommendations do not impose any limit on the amount of funding the legislature may provide to any governmental entity for a single grant project.

Although grant funding for public projects is not limited by statute, in the past the legislature has limited its grant funding awards to a maximum of \$100,000 per project. This policy reflects the legislature's interest in providing funding for a large number of projects. This policy prompts the leveraging of additional grants, loans, and in-kind services and encourages greater geographical distribution of limited grant funds.

Project Management

After an appropriations bill is enacted to authorize grants and loans, DNRC notifies the applicants of their funding status. Sponsors of funded projects are reminded that work on their projects may not begin prior to entering into a grant or loan agreement with DNRC. DNRC does not reimburse any project costs incurred before the legislative authorization is given or before a formal funding agreement is executed.

Project Monitoring

Procedures for monitoring projects are driven by a project grant contract agreement between DNRC and the project sponsor. The equivalent of two full-time staff administers the 80 or more active construction, planning, research, and public information grants.

DNRC's goal is to make site inspection visits to all projects during the construction phase. Site visits are made to spot check for problems or to respond to a request for assistance from the project sponsor. Budget and staffing constraints preclude DNRC's site involvement at every project site.

Grant agreements, as with contract instruments used for DNRC's other state and federal grant programs, require quarterly progress reports, expenditure reports, and a final report. During a project's contract term, the project sponsor must submit quarterly reports to DNRC. These reports must reflect the percentage of the project completed, the project costs to date, any problems encountered, and the need for any agreement amendment. Projects are closely monitored each quarter when quarterly reports are submitted. Program staff document decisions and conversations that affect ongoing projects, make notes to the file, and document important conversations with correspondence. Amendments to grant agreements are prepared and issued in response to any problems that require changes to the project's time line or budget.

Project sponsors submit claims and obtain reimbursement of allowable costs from DNRC. Invoices may be submitted monthly, and all costs must be supported by an invoice or receipt.

Project Evaluation

Through its ongoing monitoring efforts, DNRC evaluates grants funded under the Renewable Resource Grant and Loan Program. Upon project completion, DNRC requires submission of a final project report to document project history and the quantifiable results of the expenditure of grant dollars. This report summarizes grant expenditures, documents the work accomplished, and compares project objectives as presented to the legislature with the final project results. Evaluation of the project through a final project report enables DNRC to measure how well the projects implement the program goals of conserving, developing, managing, and preserving Montana's renewable resources. Projects are considered successful if they complete the scope of work outlined in the grant agreement.

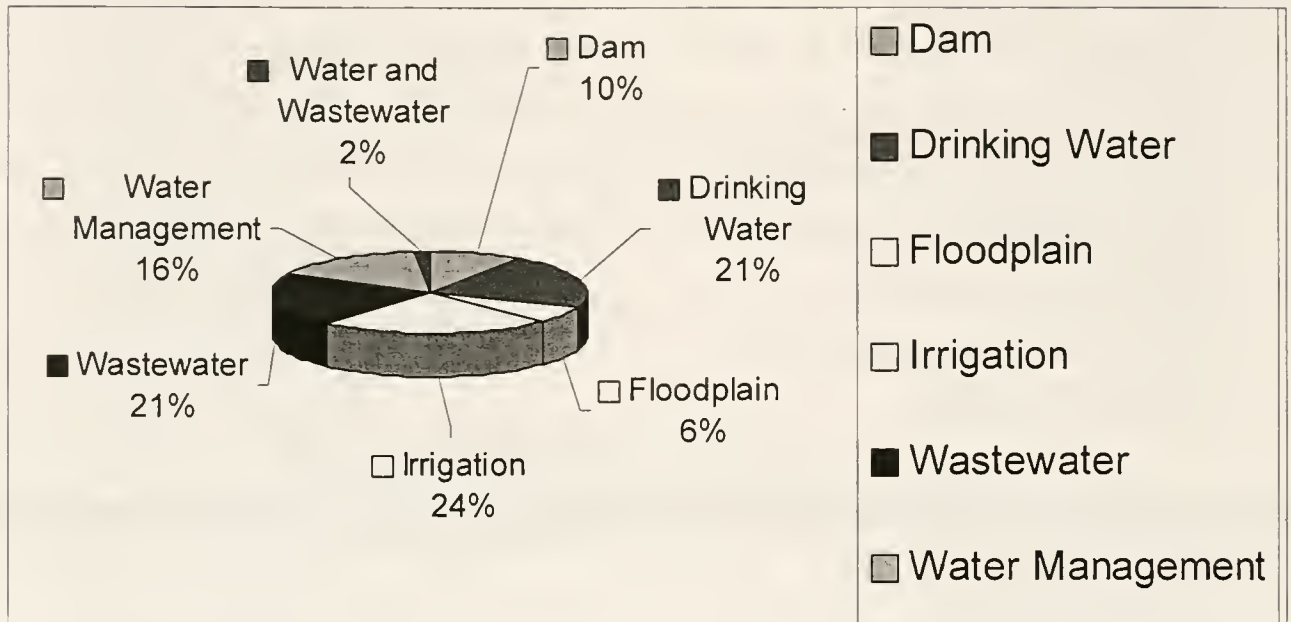
FIGURE 2 2004 Grant Applications by Order of Ranking Recommendation

Ranked Order	Project Sponsor/ Project Name	Recommended Grant Funding	Cumulative Recommended	Recommended Loan Funding
1	Milk River Joint Board of Control Halls Coulee Siphon Repair	\$ 100,000	\$ 100,000	
2	Spring Meadows County Water District Water System Improvements	100,000	200,000	
3	Montana State University Assessment of Ground and Surface Water in the Four Corners Area	99,618	299,618	
4	Beaverhead CD Spring Creek Restoration Project – Phase I	100,000	399,618	
5	St. Ignatius, Town of Wastewater System Improvements	100,000	499,618	
6	Montana Department of Natural Resources and Conservation Deadmans Basin Supply Canal Rehabilitation	100,000	599,618	\$ 50,000
7	Jefferson Valley CD Jefferson River Restoration	95,469	695,087	
8	Carter Chouteau County WSD Carter Water System Improvements	100,000	795,087	
9	Sheridan, Town of Water System Improvements	100,000	895,087	
10	Lower Yellowstone Irrigation District Lower Yellowstone Canal Control	100,000	995,087	
11	Montana Department of Natural Resources and Conservation Frenchman Dam Rehabilitation Study	100,000	1,095,087	
12	Montana Department of Natural Resources and Conservation Martinsdale North Dam Riprap Program	100,000	1,195,087	\$ 80,340
13	Seeley Lake Sewer District Wastewater System Improvements	100,000	1,295,087	
14	Upper and Lower River Road County WSD Water and Wastewater System Improvements	100,000	1,395,087	
15	Buffalo Rapids Irrigation District Improving Irrigation Efficiency and Management through Canal Automation	88,955 100,000	1,495,087	
16	Choteau, City of Water System Improvements	100,000	1,595,087	
17	Dodson, Town of Wastewater Improvement Project	100,000	1,695,087	
18	Gallatin County Gallatin County Floodplain Delineation	100,000	1,795,087	
19	Yellowstone Irrigation District Flow Measurement Project	100,000	1,895,087	
20	Gardiner-Park County WD Water System Improvements - Phase II	100,000	1,995,087	
21	Liberty County CD Chester Sprinkler Irrigation Project	100,000	2,095,087	
22	Cascade, Town Water System Improvements	100,000	2,195,087	
23	Ranch County WSD Water System Improvements	100,000	2,295,087	
24	Libby, City of Cabinet Heights Wastewater System Improvements	100,000	2,395,087	
25	Broadview, Town of Developing a Viable Water Supply for Broadview	99,997	2,495,084	

Ranked Order	Project Sponsor/ Project Name	Recommended Grant Funding	Cumulative Recommended	Recommended Loan Funding
26	Montana Department of Natural Resources and Conservation Martinsdale Outlet Canal Drop Structures	100,000	2,595,084	
27	Roosevelt County CD Fort Peck Irrigation Water Quality and Quantity Enhancement – Phase I	99,995	2,695,079	
28	Buffalo Rapids Irrigation District Improving Irrigation Efficiency and Water Quality	100,000 -72,768	2,767,847	
29	Paradise Valley ID Turnout Replacement	100,000	2,867,847	
30	Manhattan, Town of Wastewater Treatment System Improvements – Phase II	100,000	2,967,847	
31	Woods Bay Homesites County WSD Water System Improvements	100,000	3,067,847	
32	Custer Area-Yellowstone County WSD Wastewater System Improvements	100,000	3,167,847	
33	Fort Belknap Irrigation District Sugar Factory Lateral - Phase II	100,000	3,267,847	
34	Laurel, City of Wastewater System Improvements	100,000	3,367,847	
35	Yellowstone CD Canyon Creek Stream Restoration, Education, and Weed Control	100,000	3,467,847	
36	Valier, Town of Wastewater System Improvements	100,000	3,567,847	
37	Fairfield, Town of Wastewater System Improvements	100,000	3,667,847	
38	Glasgow Irrigation District Vandalia Dam Improvements - Phase III: Struts and Walkways	100,000	3,767,847	
39	Ennis, Town of Wastewater System Improvements - Phase II	100,000	3,867,847	
40	Bighorn CD Assessment of Alluvial Aquifers of Northern Big Horn County	100,000	3,967,847	
41	Savage Irrigation District Savage Irrigation Rehabilitation Plan	62,814	4,030,661	
42	Butte-Silver Bow Big Hole River Transmission Line Replacement	100,000	4,130,661	
43	Whitefish, City of Water System Improvements	100,000	4,230,661	
44	Circle, Town of Wastewater System Improvements	100,000	4,330,661	
45	Black Eagle WSD Water System Improvements	50,000	4,380,661	
46	Lewis and Clark CD Florence Canal Rehabilitation	100,000	4,480,661	
47	Sweet Grass County CD Middle Glaston Reservoir Feasibility Study	85,000	4,565,661	
48	Livingston, City of Livingston Flood Damage Reduction Feasibility Study	100,000	4,665,661	
49	Liberty County CD Marias Baseline Development	100,000	4,765,661	
50	Hammond Irrigation District Porcupine Creek Siphon Rehabilitation	38,200	4,803,861	
51	Bear Creek, Town of Water System Improvements	100,000	4,903,861	

Ranked Order	Project Sponsor/ Project Name	Recommended Grant Funding	Cumulative Recommended	Recommended Loan Funding
52	Ryegate, Town of Wastewater System Improvements	100,000	5,003,861	
53	Sun Prairie Village County WSD Water System Improvements	100,000	5,103,861	
54	Butte Silver Bow Water Master Plan	100,000	5,203,861	
55	Montana Department of Natural Resources and Conservation Increasing Montana Water Management Capacity	99,714	5,303,575	
56	Milk River Joint Board of Control Lake Sherburne Dam Outlet Works Rehabilitation	100,000	5,403,575	
57	Bigfork County WSD Wastewater System Improvements	100,000	5,503,575	
58	Ruby Valley CD Ruby Groundwater Management Plan – Phase I	33,694	5,537,269	
59	Cartersville Irrigation District Sand Creek Siphon Rehabilitation	100,000	\$ 5,637,269	\$ 30,843
	TOTAL FUNDS RECOMMENDED	\$ 5,637,269		\$ 161,183
Projects below this line were not recommended for funding				
	Blaine County CD Dry Fork Dam Spillway Improvements	0		
	Deer Lodge Valley CD Cottonwood and Peterson Creek Restoration – Phase I	0		
	Missoula County Grant Creek Restoration and Flood Mitigation	0		
	Montana Heritage Commission Virginia City Comfort Stations	0		

FIGURE 3 Requested Funding by Project Type



Project No. 1

Applicant Name	Milk River Irrigation Project Joint Board of Control	
Project Name	Halls Coulee Siphon Repair Project	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 5,750	Applicant
	\$ 3,000	Milk River Water Users
Total Project Cost	\$ 108,750	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

For over 90 years, the St. Mary Division of the Milk River Project has served to augment the Milk River water supply. The St. Mary Division provides an important renewable resource to residents along the Milk River. The St. Mary Division was built by the U.S. Bureau of Reclamation (USBR) to provide supplemental irrigation water along the Milk River, but has evolved into a multi-use project. The St. Mary Division supplies water for 120,731 Milk River Irrigation Project acres, nine municipalities, and Bowdoin National Wildlife Refuge. It provides numerous other fish, wildlife, and recreation benefits.

Using Renewable Resource Grant funds, the Milk River Irrigation Project Joint Board of Control (JBOC), in cooperation with DNRC and USBR, wishes to replace five failed expansion joints and four concrete saddle supports on the Halls Coulee Siphon. This is a construction project aimed at preserving the St. Mary water supply for beneficial use along the Milk River. Taking advantage of quantity purchase and delivery of new expansion joints would significantly reduce replacement costs. Replacement of the expansion joints will preserve the St. Mary water supply available for use in the Milk River; conserve 1,000–3,000 acre-feet annually by sealing leaks; reduce saturation, sloughing, and erosion of hillsides; and protect siphon structures from damage associated with sloughing and freeze/thaw.

Augmentation of the Milk River water supply is vital to preserve the agricultural based economy of Montana's Hi-Line region.

Technical Assessment

Project Background

The Halls Coulee Siphon is part of the Saint Mary Canal, which delivers Saint Mary River water to the Milk River. The Milk River, in turn, supplies water to 120,731 irrigated acres, 9 municipalities, and the Bowdoin National Wildlife Refuge. In normal years, 50 to 75 percent of the water in the Milk River comes from the Saint Mary Canal. In dry years, the percentage of Milk River water that comes from the Saint Mary Canal is estimated to be as high as 97 percent.

The Halls Coulee Siphon is composed of two barrels and includes 5 expansion joints and four concrete saddle supports. The siphon was constructed with a design life of 50 years, but has now been in operation for more than 90 years. Over time, downslope creep and freeze/thaw damage caused by local soil saturation has resulted in failure of the concrete saddles supporting the right barrel. Leakage from the expansion joints has exacerbated soil saturation and subsequent damage. The five expansion joints and the failed supports must be replaced to keep the siphon, and the Saint Mary Canal, in working condition for another 35 to 50 years.

Technical Approach

The project goals are to preserve the ability to supply Saint Mary River water to the Milk River and conserve water for beneficial use along the Milk River. This project proposes to meet these goals by repairing the Halls Coulee Siphon. Siphon repair will consist of replacing five leaking expansion joints, two on the left barrel and three on the right barrel, and four failed concrete saddle supports.

The only alternative to the proposed approach that was considered was the “no-action” alternative; no other logical alternatives appeared to be available. The “no-action” alternative was considered unacceptable because the eventual result would be complete failure of the siphon and a loss of ability to deliver Saint Mary River water to the Milk River.

Project Management

The chairman of JBOC will act as project manager and will coordinate activities of JBOC and USBR. Since the Saint Mary Division of the Milk River Project is owned and operated by USBR, USBR personnel will manage all aspects of construction. The Glasgow Irrigation District Manager will supply administrative support. Public input has been, and will continue to be, handled by the JBOC via public meetings, newsletters, and newspaper articles. The project management team and approach appears to be appropriate for the project, but details were not provided in the application to explaining the specific role to be played by USBR.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$5,750	\$5,750
Professional & Technical	\$0	\$0	*	\$0
Construction	\$100,000	\$0	\$3,000	\$103,000
Total	\$100,000	\$0	\$8,750	\$108,750

The budget strategy provided in the application appears to be reasonable. Rates, hours, and costs provided for administration and construction appear to be appropriate.

The applicant presented their budget without a breakdown of professional and technical costs. USBR estimates that \$37,000 of water user operation and maintenance O&M assessment funds will be used to complete this project.

* The O&M assessment funds have not been documented as a match for this grant because requiring USBR to track its time significantly adds to the water user costs and delays in reporting requirements associated with the grant.

Benefit Assessment

The main benefits of the project are water conservation and infrastructure preservation. Replacing the expansion joints is estimated to save 1,000 to 3,000 acre-feet of water annually. Repairing the siphon components is estimated to preserve the functionality of the Saint Mary Canal, which is a key component of the Milk River Irrigation Project, for another 35 to 50 years.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. Short-term construction related impacts will be controlled through permitting and proper construction methodology. Environmental benefits will include reduction in hillside erosion and sloughing caused by leakage. Failure of the siphon would cause significant erosion, property damage, and threat to human life.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 2

Applicant Name	Spring Meadows County Water District		
Project Name	Water System Improvements		
Amount Requested	\$ 100,000	Grant	
Other Funding Sources	\$ 22,560	Local Resources	
	\$ 402,140	PCSRF Program	
	\$ 500,000	Treasure State Endowment Program (TSEP) Grant	
Total Project Cost	\$ 1,024,700		
Amount Recommended	\$ 100,000	Grant	

Project Abstract (Prepared and submitted by applicant.)

The Spring Meadows Subdivision was developed in the early 1990s. It is located approximately 8 miles west of Missoula, northeast of the junction of Interstate 90 and Highway 93. In early 2002, the subdivision elected to form the Spring Meadows County Water District to oversee the provision of water service. There are currently 65 homes and 1 fire hall on the public water system. There have been no major improvements to the water system to date; however, in March 2004 the two wells were evaluated. The pump in Well #2 was lowered in an attempt to increase production and prevent the drawing of air into the pump. Well #1 was chlorinated and jetted in an attempt to curb the growth of iron bacteria.

The Spring Meadows public water system has serious deficiencies that prevent an adequate quantity of water from being delivered to the homeowners. Very low pressures are regularly experienced during the irrigation season and the potential for negative pressures is high. One fundamental problem is that the two wells, which operate in conjunction with hydropneumatic pressure tanks, cannot meet the peak instantaneous demand. Well #1 is contaminated with iron bacteria and Well #2 pumps an excessive amount of sand. Sand pumped into the distribution system prevents the use of water meters. In addition, there are two dead-end mains where stagnant conditions exist and sand accumulates. There is no storage on the water system to provide fire protection.

The proposed \$1,024,700 project would install meters for all 65 users, construct a 150,000-gallon concrete storage tank and booster pump station, replace Well #2 with a new well, add four fire hydrants, eliminate two dead ends, and construct an administrative building for the Spring Meadows County Water district. The project would effectively correct the current problems with the water system.

Technical Assessment

Project Background

The Spring Meadows Subdivision was developed in the early 1990s. It is made up of 64 homes and a local fire station. The subdivision is located approximately 8 miles west of the City of Missoula, just north and east of the junction of Interstate 90 and U.S. Highway 93. Water service is provided by a public system that utilizes 2 groundwater supply wells, 14 captive air tanks, a distribution system, and 4 fire hydrants. Well #1 was drilled in 1992 to a depth of 280 feet. Well #2 was drilled in 1991 to a depth of 259 feet, and then deepened to 293 feet in 1992. Each well pump has been replaced twice over the last 12 years.

In the spring of 2002, the Spring Meadows Subdivision elected to form a water district to oversee the provision of water service. There have been no major improvements to the water system to date; however, in March 2005 the original well driller evaluated the two wells. The pump in Well #2 was lowered in an attempt to increase production and prevent the drawing of air into the pump. Well #1 was chlorinated and jetted in an attempt to curb the growth of iron bacteria.

The Spring Meadows public water system has the following deficiencies:

- The two wells cannot meet the peak instantaneous demand.
- There is no storage on the water system to provide fire protection or adequate water quantity and water pressures during the irrigation seasons.
- Well #1 is contaminated with iron bacteria and Well #2 pumps an excessive amount of sand.
- Sand pumped into the distribution system prevents the use of water meters.
- There are two dead-end mains where stagnant conditions exist and sand accumulates.
- Very low pressures are regularly experienced during the irrigation season and the potential for negative pressures is high.

Technical Approach

The goals of the proposed project include enhancing reliability and performance of the wells as needed to provide an adequate amount of water to meet all demand conditions. Improvements to the distribution system will meet Montana Department of Environmental Quality (DEQ) 1 requirements for providing fire protection, improve hydraulic characteristics, and reduce stagnation and accumulation of sand. The addition of effective storage in the system will provide an adequate water supply for district residents at the appropriate pressures as well as provide an adequate source of water for fire protection.

The objectives to achieve the project goals include drilling a new well, upgrading an existing well, constructing a 150,000-gallon storage tank, adding a booster pump station, looping the dead end mains, adding four new fire hydrants, installing meters at each service connection, and constructing an administration building.

An alternatives evaluation and comparison was conducted that evaluated the present worth cost, O&M costs and complexity, environmental impacts, public health and safety, flexibility, and ease of implementation.

Wells

The applicant evaluated four alternatives for improving the water supply for the Spring Meadows system, including replacing Well #1, replacing Well #2, upgrading Well #1, or upgrading Well #2. Based on the alternative's evaluation and comparison, it was determined that a combination of two alternatives, replacing Well #2 and upgrading Well #1, was the best choice. Well #1 has a pump that is only three years old, and recent jetting of this well should put the casing in relatively good operating condition. It appears to be functioning as expected. Future improvements to, or replacement of, Well #1 could be scheduled in the future if necessary and as financial resources become available. Well #1 is not capable of pumping the average daily design demand as required by DEQ 1. However, DEQ stated that this pumping capacity may be allowed with the addition of the proposed storage tank if a deviation request is submitted, reviewed, and approved. Well #1 is also experiencing the growth of iron bacteria. The district will need to be diligent in controlling growth of the bacteria through periodic chlorination and jetting. Periodic removal of the pumping unit and jetting the well may also be necessary.

There are limited and inadequate perforations in Well #2 causing extreme velocities, excessive head loss, and unnecessary energy usage. It was determined that Well #2 is probably the primary source of sand in the distribution system. Adding perforations and lowering the pump would improve the system, but the applicant stated that the well has inherent problems that cannot be corrected. Drilling a new well was the selected alternative.

Distribution System

The applicant determined that the existing 6-inch distribution lines are adequately sized to pass anticipated flows, including fire flows, but that there are not enough hydrants to meet the requirements of DEQ 1. The existing water meters have been plugged with sand over the years and most have been removed. The system has a dead-end main and it should be looped to avoid stagnant water and improve hydraulic flow.

The proposed alternatives for the distribution system include adding new hydrants to meet DEQ standards, installing water meters at each service connection, and looping the system. These options have no alternatives (other than "no action"), thus a comparison to each other was not completed. The applicant suggested that the proposed work would be worthwhile in terms of improved system performance and additional protection of public safety.

Storage Tank

Three types of tanks were considered in the alternatives evaluation: an elevated steel tank, an on-grade steel tank, and an on-grade concrete tank. On-grade tanks can be partially buried to minimize aesthetic impacts. In addition, the elevated tank was more expensive, and the height of the tank could work as a deterrent to good operational practice, particularly if the operator of the system has an aversion to heights. The on-grade steel and concrete tanks were comparable. The concrete tank was less expensive and the use of chemicals required for painting the steel tanks would be minimized. The on-grade concrete tank was the selected alternative.

If a site cannot be obtained with sufficient elevation for the storage tank location, a booster pump station will be necessary. The booster pump station was included as part of the selected alternatives.

The "no-action" alternative was considered and dismissed because continuation of the current situation would not resolve the present and future system shortcomings. Lack of an adequate water supply and storage creates an unacceptable situation with low water pressure, lack of adequate water availability, and severe limitations in fire fighting capability.

Project Management

The district board, while relatively new, has taken an active role in the assessment and resolution of issues associated with its water system. The board has utilized qualified professionals to help manage its system as well as provide engineering and grant writing services. The Midwest Assistance Program, a non-profit entity, is the authorized representative for the application. It and the project engineer have been involved in several public facilities projects and are very familiar with the requirements of the funding agencies. They will work directly with the board to ensure that the project is properly managed, and that all technical, financial and regulatory requirements are addressed. The district also has an attorney and will obtain legal bond counsel to oversee the issuance of debt for the project.

Project status reports will be produced, as will financial summaries, final closeout documentation, and ongoing communication.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$75,200	\$75,200
Professional & Technical	\$0	\$0	\$176,695	\$176,695
Construction	\$100,000	\$0	\$672,805	\$772,805
Total	\$100,000	\$0	\$924,700	\$1,024,700

The applicant provided a complete analysis of the budget required to complete the project, including administration costs, O&M, salvage values, the cost of developing the PER, and a 12.2 percent contingency. The budget strategy provided in the application is sound and relies on other programs that fund public facilities. The PCSRF Program has been contacted, and application for the TSEP program is being reviewed. Local reserves were used to help fund the Preliminary Engineering Report. The applicant is a water district and has the ability to collect charges for debt and operation. The project will impact 65 residents by increasing service rates from \$22 to \$68 a month (1.2 times the target rate of \$55.48 a month). There is the possibility of extending the PCSRF loan to 30 years to reduce the required monthly payments.

The budget appears reasonable. Cost estimates were based on suppliers, contractors, and other projects that have been bid.

Benefit Assessment

This project includes a new well to provide more water to the community, a storage tank to more effectively use the water, and water meters. It also includes looping the system, which allows for a more efficient and

quality water supply to the community. Replacing the static phase converter with a variable frequency drive converter will conserve electrical energy. Improvements to Well #2 will save energy.

The new administration building will allow for better management and operation practices. The water meters will improve management. The source water delineation and assessment report, which was completed this spring, helps protect their groundwater resources by identifying risks to the wellhead and methods to reduce those risks, and a telemetry system will remotely control tank elevations.

Environmental Evaluation

The proposed improvements will have limited adverse environmental impacts with the exception of the storage tank, which will affect the visual aesthetics. Land requirements are restricted to a 0.25- to 0.5-acre lot for the tank location, and a small parcel for the administrative building and access roads. The booster pump station will require additional energy, though it will be partially offset by the lower pumping head imposed upon the well pumps.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 3

Applicant Name	Montana State University
Project Name	Assessment of the Interaction between Groundwater and the Gallatin River in the Four Corners Area

Amount Requested	\$ 99,618	Grant
Other Funding Sources	\$ <u>0</u>	
Total Project Cost	\$ 99,618	

Amount Recommended	\$ 99,618	Grant
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Project Abstract (Prepared and submitted by applicant)

The Four Corners area is on the Gallatin River at the intersection of U.S. Highway 191 and Montana Highway 85 in Gallatin County. Considerable concern has been expressed by local residents, conservation groups, and agricultural interests regarding the impact of development on Gallatin River flows and on ground-water levels in the area. Concern has led to a proposal for a controlled groundwater area near Four Corners. Many suggest a numerical groundwater model for the area. Before a model can be developed, however, data is needed regarding the hydraulic connection between the surface- and groundwater water systems. Existing data are sparse and what data does exist is contradictory. The primary goal of this project is to collect data on the connection between the river and the groundwater flow system. Data to be collected include vertical hydraulic gradient and hydraulic conductivity of the streambed, riverbed temperature, aquifer hydraulic conductivity, and hydraulic gradients in the alluvium near the river. Temperature will be used as a surrogate for flux calculations into and out of the riverbed and will be calibrated with flux measurements in the streambed.

The data will be used to interpret the relationship between groundwater and the Gallatin River. A second goal is to monitor shallow water levels in wells adjacent to the river, piezometers in the river, and river and irrigation ditch stage so that interpretations can be made regarding surface and groundwater interactions. These data will provide information necessary to create and later validate and modify a numerical model. The project will provide data so that developers, hydrologic consultants, conservation groups, resource managers, county elected officials, and local residents can make better informed decisions regarding the impact of groundwater withdrawal on the groundwater system and the relationship between that system and the Gallatin River near Four Corners.

Technical Assessment

Project Background

The need for this project results from a complex history of residential, commercial, and industrial growth in a historically agricultural area. The Four Corners area, located west of Bozeman, Montana and within the West Gallatin River drainage basin, is experiencing rapid growth and development. Land use in the Four Corners area is changing from irrigated agriculture and pastureland to a complex distribution of residential, commercial, agricultural, and industrial activities. The West Gallatin River is also a high quality fishery. This rapid growth and diversification of land use has led to a demand on and a concern for limited groundwater resources. Conflict between competing interests has resulted from this current development and land use change.

Various agricultural groups, conservation groups, private citizens, and a local community foundation are concerned with the impact of future groundwater withdrawal on the West Gallatin River. A controlled groundwater area has been proposed to the Montana Department of Natural Resources and Conservation (DNRC) to prevent further groundwater development in the basin until more data are collected and the surface water and groundwater impact is evaluated. Current available data are limited. More detailed data for use in quantifying the connection of the Gallatin River to the groundwater system are needed. Reliable and defensible hydrogeologic data are necessary for the decision makers to help in quantifying the groundwater conditions in the basin.

Technical Approach

The project goal is to collect data on the hydraulic characteristics of the riverbed and shallow alluvium, the degree of hydraulic connection between the river and the groundwater, and to identify areas of the West Gallatin River that are gaining and losing stretches. This data will be used to help evaluate the relationship between the groundwater system and the West Gallatin River and associated irrigation ditches. The main components of the project include:

1. Collect hydraulic data necessary to complete a numerical groundwater flow model
2. Establish monitoring locations that will be used to assess the response of groundwater to surface water interactions
3. Quantify the hydraulic properties of the flow system

Several alternatives, including the "no-action" alternative, were considered for the project. The preferred alternative was selected based upon initial cost and performance. The relationship between the river and groundwater system cannot be effectively evaluated without the collection of the proposed data. Although a groundwater flow model is not proposed as part of this project, DNRC has committed funds to develop a groundwater model to evaluate the interaction of groundwater and surface water based on the data collected as part of this assessment. The groundwater model will be developed during initial data collection, and will be modified as new data are provided. The groundwater model can be developed only if the proposed data collection effort is implemented.

Project Management

A Montana State University Earth Sciences professor will take the lead in project management and as the principal investigator (PI). Based upon previous DNRC-RRGL projects completed by this professor, he is well-qualified to manage the project. The project manager will work with DNRC staff in Helena, the Gallatin Local Water Quality Protection District in Bozeman, and other stakeholders to ensure that appropriate data are collected and that the public has the opportunity to participate in the data collection process. Roles of the project manager are clearly defined in the grant application and are appropriate given the budget allocations and project approach. The project budget allows for funding to support the financial and administrative aspects of the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$14,882	\$0	\$0	\$14,882
Professional & Technical	\$76,480	\$0	\$0	\$76,480
Construction	\$8,256	\$0	\$0	\$8,256
Total	\$99,618	\$0	\$0	\$99,618

This budget appears to be sufficient and reasonable to fund the proposed project. The applicant provided a detailed breakdown of unit costs. Material, labor, and equipment costs used to develop the budget appear to be reasonable and adequate. No costs of the various alternatives are provided; but justification for the proposed action as the least-cost alternative in the long run is provided and is reasonable.

Aside from the direct benefit of individual ranchers, farmers, and landowners who will host monitoring wells and allow access to and across their property, the proposed investigation will positively assist all residents in the assessment area by providing a complete data base from which informed decisions can be made. Based on the 2000 census, approximately 2,000 people reside in the Four Corners area, and will directly or indirectly benefit from this assessment. In addition, large numbers of recreational visitors using the West Gallatin River will benefit from the decisions based on realistic and quality data collected during this study.

Benefit Assessment

The primary benefits to renewable resources are resource management and resource protection. The proposed project would result in measurable benefits of groundwater protection through better stewardship of the land and improved quantification of the potential to impact surface water from a groundwater development proposal. The proposed project would provide the necessary data for use in protecting and preserving existing groundwater and surface water.

In addition, secondary benefits from the proposed project include resource conservation and multiple use. The proposed project would result in measurable future renewable resource benefits through the implementation of protection of surface water and groundwater and will contribute to the enhancement of Montana's fisheries and wildlife habitat by providing a means of preventing dewatering of the West Gallatin River.

All the above benefits are relatively long-term and would be quantified through the use of data collected as part of this project. Using the data, the development of a groundwater flow model by DNRC is essential to future groundwater beneficial use permit applications since all direct and immediate decisions will be able to be made based on actual data collected as part of this study.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. The beneficial results are primarily related to the collection of significant hydrogeologic data for use in developing a groundwater model that will be available to the regulatory agencies and general public for use in future decision-making processes. Minimal short-term construction-related impacts (from installation of the monitoring equipment) will be controlled through permitting, landowner access permission, and proper construction methodology.

Funding Recommendation

DNRC recommends grant funding of \$99,618 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 4

Applicant Name	Beaverhead Conservation District	
Project Name	Spring Creek Restoration Project – Phase I	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 4,000	Beaverhead Watershed Committee
	\$ 3,000	Montana Department of Fish, Wildlife and Parks (DFWP) Future Fisheries Program
	\$ 2,000	East Bench Irrigation District
	\$ 2,500	Local Landowners
	\$ 68,785	USDA/Natural Resource Conservation Service (NRCS)
Total Project Cost	\$ 180,285	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Spring Creek Restoration Project is a locally led stream restoration effort to improve water quality, soil conservation, and fisheries in the lower 3 miles of Spring Creek, a tributary to the Beaverhead River. The confluence of Spring Creek is located 20 miles north of Dillon at Beaverhead Rock, a well-known location where Lewis and Clark camped. The project is being implemented under two phases. This funding request is for phase I, which will restore and protect the riparian corridor and mitigate water quality impacts. Phase II will focus on expanding fishery.

Restoration is proposed to benefit both Spring Creek and the Beaverhead River by mitigating a major sediment source from streambanks and providing summer refuge to fish in the Beaverhead River that are exposed to extremely warm water temperatures. Under phase II, efforts will focus on supporting fall spawning opportunities for brown trout and emergence for their young. Implementation of this project will address the primary natural resource conservation issues in this watershed.

The Beaverhead Watershed Committee (BWC), in association with the Beaverhead Conservation District (Beaverhead CD), is working on a basin-wide assessment of over 15 streams and the Beaverhead River as part of a DEQ 319 grant. The project is underway, and should be completed in 2005. Chemical, physical, and biologic data are being collected under the study. Spring Creek was assessed in late 2003 and the report for the assessment is in progress. The assessment included evaluation of the riparian corridor, aquatic life, chemical, and physical attributes of Spring Creek. Streambank sedimentation and habitat degradation on the lower two miles of the project area are supported by the assessment data and are the major cause of water quality impacts in the watershed. The upper mile of the project area is in much better condition, and is considered to be a reference reach for the lower two miles. Review of the interim data for this project clearly supports the need for restoration and resource conservation in Spring Creek.

Project landowners have agreed to work with BWC to improve water quality, minimize soil loss, and protect fisheries. In addition to stabilizing streambanks, revegetating stream corridors will provide filtration for agricultural runoff and shade needed to improve fisheries. Once the riparian corridor is well established, restored riparian areas will provide forage and cover for wildlife and limited grazing opportunities by livestock under prescribed grazing plans. Restoring cover and structure to streams will establish fish habitat in areas currently unable to support healthy fish populations. The proposed restoration project will serve as a learning tool for the landowners in the Beaverhead watershed and will provide a positive example for increasing public awareness and involvement in the two-phased Spring Creek restoration project.

Technical Assessment

Project Background

Spring Creek flows into the Beaverhead River about 20 miles north of Dillon at Beaverhead Rock, a prominent landmark where Lewis and Clark camped during their journey. An assessment of lower Spring Creek by BWC in 2003 showed streambank sedimentation, habitat degradation, and impaired water quality,

particularly in the lower two miles. BWC is a diverse group of ranchers, anglers, outfitters, agency representatives, and other citizens concerned with the health of the Beaverhead River drainage.

BWC, in association with Beaverhead CD, is currently collecting chemical, physical, and biological data on 15 streams and the Beaverhead River as part of a DEQ 319 grant. During this study, BWC has identified three watersheds that are urgently in need of restoration: Spring Creek, Stone Creek, and the West Fork of Blacktail Deer Creek.

BWC's proposal for restoration of lower Spring Creek involves two phases. This funding request applies only to Phase I, which is designed to restore and protect the riparian corridor and mitigate water quality impacts. Phase II will focus on expanding fishery benefits in cooperation with DFWP.

Technical Approach

Proposed project activities include streambank reshaping, revegetating riparian zones, fencing riparian areas, adopting grazing plans per NRCS specifications, improving the stream channel, installing water gaps, and reinforcing hydraulic structures needed for stream stability. More than 15,000 feet of streambank will receive treatment, and 38,000 feet of new fence will be built to protect riparian areas and create new pastures. No major construction activities, such as moving stream channels, are proposed. Heavy equipment may be used on a few selected reaches where the stream is heavily incised or where protecting key hydraulic structures with rock is necessary. Native plant materials will be placed where they should occur naturally to strengthen riparian and floodplain areas over time. The use of bioengineering techniques will improve the ecological integrity of the stream corridor and reduce fragmentation of fish and wildlife habitat.

All of the proposed actions will improve water quality, minimize soil loss, and enhance the headwaters trout fishery. Improved habitat in lower Spring Creek will provide refuge for brown trout in the Beaverhead River during summer months, and potentially provide fall spawning opportunities.

Project Management

The project will be administered by BWC through its watershed coordinator and chairman. BWC and Beaverhead CD personnel have experience in managing similar projects. BWC meets every two months, and its meetings are advertised and open to the public.

The project appears to be well thought out and has significant and diverse public support. Spring Creek landowners have agreed to work with BWC on stabilizing streambanks and protecting the riparian zone from overuse by livestock. Secondary review of the project was provided by DFWP fishery biologist for the Beaverhead River drainage.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$6,000	\$0	\$4,000	\$10,000
Professional & Technical	\$15,000	\$0	\$0	\$15,000
Construction	\$79,000	\$0	\$76,285	\$155,285
Total	\$100,000	\$0	\$80,285	\$180,285

The proposed budget is clearly stated and appears reasonable. The cost estimates are detailed and fall within the typical range for projects of this type.

The majority of the project funding covers construction and implementation costs, including plant materials, light and heavy equipment, supplies and materials, labor, and engineering.

The RRGL grant would be matched by \$72,785 from NRCS, \$3,000 from DFWP's Future Fisheries Program, \$2,500 from local landowners, and \$2,000 from the East Bench Irrigation District. The NRCS funding (through the Environmental Quality Incentives Program [EQIP] and the Wetland Habitat Incentive Program) will be decided in May or June of 2005; the Future Fisheries grant request has not yet been made. The

NRCS match is critical to completion of the project, since it funds the majority of the riparian fencing. The RRGJ grant will be made contingent upon securing the NRCS match.

Benefit Assessment

The proposed project provides numerous renewable resource benefits. Water will be conserved in Spring Creek by relocating and reducing leakage in an irrigation ditch. An eroding streambank will be restored, eliminating a point source of sediment. The functioning of riparian systems and existing aquatic resources will be improved. The brown trout fishery in the Beaverhead River likely will be enhanced over the long term by improving fish passage into Spring Creek and creating spawning habitat. Improvements to this highly prized fishery will contribute to the area's recreational potential and give a boost to the local economy. The project has diverse and extensive public support, including agencies and citizens.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly evaluated and no long-term adverse impacts are anticipated. There may be some short-lived turbidity increases due to construction activities.

Numerous beneficial impacts will accrue, including sediment reduction, erosion control, riparian enhancement, fishery improvement, and water conservation.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 5

Applicant Name	St. Ignatius, Town of		
Project Name	Wastewater Collection, Treatment, and Disposal		
Amount Requested	\$	100,000	Grant
Other Funding Sources	\$	50,000	Applicant
	\$	500,000	Community Development Block Grant (CDBG)
	\$	400,000	Indian Health Service (IHS) Grant
	\$	500,000	Treasure State Endowment Program (TSEP) Grant
	\$	1,184,500	USDA Rural Development (RD) Grant
	\$	<u>1,184,500</u>	USDA RD Loan
Total Project Cost	\$	3,919,000	
Amount Recommended	\$	100,000	Grant

Project Abstract (Prepared and submitted by applicant.)

Municipal wastewater treatment in St. Ignatius is provided via a gravity collection system and a single-cell facultative lagoon that discharges to an unnamed spring creek.

The treatment system has a history of violations of the National Pollutant Discharge Elimination System (NPDES) discharge permit limits. Violations include exceeding discharge permit limits for biological oxygen demand (BOD), total suspended solids (TSS), percentage of BOD removal, and fecal coliform. The discharge continues to exceed the permit limits for BOD and TSS and has never met the NPDES limit for fecal coliform colonies. The town is under an EPA-ordered compliance schedule to meet the discharge permit limits by October 1, 2004.

In-stream testing has confirmed that ammonia levels in the receiving water exceed tribal water quality standards and that a toxic condition is occurring. Ammonia toxicity affects aquatic life, including fish, amphibians, and other aquatic species.

Flow monitoring has verified that the lagoon leaks in excess of four times the state design standard of 500 gallons per acre per day.

The discharge of inadequately treated wastewater effluent to the spring creek and groundwater results in degradation of surface water and groundwater and presents a direct threat to the public health and safety. Residents near and downstream of the sewer lagoon rely on groundwater wells for drinking water. Residents are also endangered via the spring creek or Matt Creek through direct contact or vector contact that would most likely occur through contact with pets or livestock.

The existing facultative lagoon cannot provide the level of treatment necessary to meet the NPDES discharge permit limits or the tribal water quality standards.

The proposed solution is to construct a storage and irrigation system with land application of treated effluent. The proposed system eliminates surface and groundwater degradation and the public health and safety problems associated with the discharge from the existing wastewater system. Also, effluent will be put to a beneficial reuse. The facility will meet all applicable tribal and EPA standards.

Technical Assessment

Project Background

The Town of St. Ignatius, located in Lake County on U.S. Highway 93, has struggled to maintain operation and service of its wastewater treatment system in compliance with the system NPDES Permit for a number of years. The current system was designed as a single-cell facultative lagoon and was constructed in 1956. The lagoon discharges to a spring creek that flows part of the year. During periods when the spring creek does not flow, the discharge seeps into the aquifer prior to reaching Matt Creek. Surface water and groundwater is being polluted due to the discharge and leakage of inadequately treated wastewater from the lagoon. The single-cell lagoon encourages short-circuiting and it is severely undersized for the existing service population. Five floating aerators and a small quiescent cell at the discharge were installed in 1989 in an effort to improve treatment and the quality of the discharge. The aeration system has had difficulty maintaining acceptable dissolved oxygen levels due to the shallow depth of the facultative lagoon cell. NPDES permit violations for BOD, BOD percentage removal, and TSS continue to occur.

A Comprehensive Performance Evaluation was completed in 1997 by the Hagener Science Center at Montana State University (MSU) Northern. The report noted discharge violations for the previous years and rated the system as marginal in its ability to handle current treatment requirements and increased demands due to future growth. The town imposed a moratorium on new service connections and proceeded with efforts to develop a cost-effective, long-term solution that resolves the environmental and public health and safety issues associated with the outdated facultative lagoon system.

Technical Approach

The upgraded system will be a non-discharging treatment, storage, and irrigation system. Approximately 2 acres to the south of the existing lagoon would be used to construct a new aerated lagoon cell. The existing facultative lagoon footprint would be used to construct the storage pond. Treated effluent would be piped to a site located northwest of St. Ignatius via an 8-inch transmission main for spray irrigation.

The system will effectively eliminate existing surface and groundwater degradation and the public health and safety problems associated with the discharge from the existing wastewater system. Furthermore, the treated effluent will be put to a beneficial reuse via crop application. The upgraded facility will have improved treatment efficiency and meet all applicable tribal and U.S. Environmental Protection Agency standards.

This study included an alternative screening process and a detailed alternatives analysis. A list of 17 wastewater treatment alternatives was developed in the screening process, including a "no-action" alternative. Both discharging and non-discharging options were considered. The alternatives selected for detailed analysis included:

- Advanced treatment via a Sequencing Batch Reactor
- Aerated lagoon, storage lagoon, and disposal via land application with irrigation system

Because of its location on the Flathead Reservation, all wastewater treatment alternatives considered must satisfy the tribal Surface Water Quality and Anti-degradation Policy and accepted design standards, and must be capable of satisfying periodic inspections by USEPA. Each alternative is also subject to the pollution prevention requirements of the Surface Water Quality and Anti-degradation Policy and the Clean Water Act, and must be capable of being operated in a manner that does not cause environmental pollution or present a public health or safety risk.

The application presented a reasonable schedule, with construction occurring in a phased approach. The aerated lagoon, blower building, aeration system, and temporary discharge will be constructed in 2006. Discharge from the existing lagoon will be directed to the new aerated pond. The sludge in the existing lagoon will dry and be removed in 2007. The storage lagoon will then be constructed in the existing facultative lagoon's footprint and irrigation pivots will be installed. The project is scheduled for completion in September 2007.

Project Management

The town has contracted with a consulting engineering firm, for the management and administration of the project. The consulting firm will also be the project contact and funding agency liaison. The town clerk, mayor, and members of the council round out the project management staff. The application summarizes the responsibilities of each member of the project management team including financial management, project management, inspection of construction, and O&M.

The mayor will have primary responsibility to oversee and monitor consultant and contractor work. Consultants will be required to attend monthly council meetings to report the status of the project work and to submit detailed work plans and schedules. Land acquisition, easements, permitting, and other legal and administrative issues have been identified and responsibilities assigned to ensure these issues are addressed properly.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$201,200	\$201,200
Professional & Technical	\$65,000	\$0	\$752,500	\$817,500
Construction	\$35,000	\$0	\$2,865,300	\$2,900,300
Total	\$100,000	\$0	\$3,819,000	\$3,919,000

The population served by the wastewater treatment system is approximately 530 people. The applicant submitted complete cost estimates, including capital costs, O&M costs, land acquisition, right of way, permits, contingencies, cultural and geotechnical investigations, and administrative/financial costs. The estimates when compared with other projects appeared reasonable.

The funding sources identified in the application are realistic. The applicant is applying for grants from RD, TSEP, CDBG, DNRC, and IHS, and will take out an RD loan. In addition to the sources mentioned above, the town will contribute \$50,000 from its reserves to pay off the RD loan. With the proposed funding plan in place, combined water/sewer user fees will increase from a rate of \$33.00 per month to \$54.03 per month. This increased rate is 122 percent of the estimated target rate for the town. The public has been well informed about the project, and letters of support were included in the application.

If requested grant funds are not received, or if the amount of grant funds is substantially less than the amount requested, the project could be delayed until additional funding is available. One option would be to apply for an EPA STAG grant to finalize the funding package, or request an additional RD grant.

Benefit Assessment

The proposed project will result in improved water quality that will satisfy tribal water quality standards and meet the designated uses for Class B-1 streams. The project will conserve and protect natural resources for current and future beneficial use by maintaining or improving water quality in the receiving waters.

Surface and groundwater quality will be improved; domestic wastewater will be put to a beneficial reuse; wildlife, waterfowl, fisheries, and aquatic habitat will be improved; and land resources will be further enhanced by the application of wastewater. The wastewater provides nitrogen and phosphorous for fertilizer and serves as a soil conditioner and amendment to improve moisture retention and other soils qualities. This will reduce agricultural chemical use.

Environmental Evaluation

The proposed project is a non-discharging treatment, storage, and irrigation system. The applicant submitted a completed Environmental Checklist. There are no long-term adverse environmental impacts associated with the selected alternative. The new lagoons will be constructed in the same location as the existing lagoon. Leakage from the existing lagoon will be mitigated with the new lined lagoons. Significant improvements to groundwater will be realized with the new lined non-leaking lagoon. Eliminating the surface discharge from the existing lagoon and replacing it with the new non-discharging lagoon will greatly improve surface water quality and quality of water in the wetland area below the lagoon. Elimination of the existing discharge will eliminate ammonia toxicity in the spring creek. The new system will provide limited irrigation water for use by farmers and ranchers.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 6

Applicant Name	Montana Department of Natural Resources and Conservation (DNRC)	
Project Name	Deadman's Basin Supply Canal Rehabilitation Project	
Amount Requested	\$ 100,000	Grant
	\$ 50,000	Loan
Other Funding Sources	\$ 8,000	Deadman's Basin Water Users Association (WUA)
	\$ 41,432	DNRC, State Water Projects Bureau (SWPB)
Total Project Cost	\$ 199,432	
Amount Recommended	\$ 100,000	Grant
	\$ 50,000	Loan

Project Abstract (Prepared and submitted by applicant)

The Deadman's Basin Water Project (DMBWP) is owned by DNRC and operated by the Deadman's Basin Water Users Association (WUA). DMBWP comprises a 76,900 acre-feet, off-stream reservoir; one 11.5-mile, 600-cubic feet per second (cfs) supply canal; and two delivery canals that total 12.5 miles in length. The original project was completed in 1941.

Water from the project irrigates ranch and farmland; restores summertime flow in the Musselshell River (a perennially dry stream); supplies water to the towns of Ryegate and Melstone; provides habitat for rainbow and brown trout, Kokanee salmon, and tiger muskies; and offers a recreational resource to boaters, hunters, and anglers.

Due to deterioration from age, design deficiencies, and insufficient repairs, the supply canal now requires substantial rehabilitation. Some of the large concrete canal structures are approaching imminent structural

failure. Several large embankment dams, which impound many acre-feet of water in coulees traversed by the supply canal could breach. Floodwaters would cause severe damage to U.S. Highway 12 and to ranch homes and other private property.

Another concern is that considerable quantities of water are lost through the porous soils of the canal channel. This loss compounds the six consecutive years of drought to bring some ranchers and farmers to the brink of bankruptcy. The water users propose to line several reaches of the supply canal.

DNRC proposes to conduct a feasibility study for rehabilitating the canal, and to install canal lining on the most porous reaches of the canal.

DNRC is requesting a grant of \$100,000 and a loan of \$50,000 as the first step in a three-phase process that will eliminate hazardous conditions and conserve water for beneficial use to landowners and the general public.

Technical Assessment

Project Background

DMBWP is located in on the north side of the Musselshell River in Wheatland and Golden counties. It diverts water from the Musselshell River approximately 10 miles east and downstream of Harlowtown. Built in 1941, the project provides water for 230 households, including the towns of Melstone and Ryegate, and 160 farms totaling 28,516 acres. From the diversion, water is conveyed through a 600-cfs, 11.5-mile supply canal; the sole source of water for the 76,900 acre-feet, off-stream Deadman's Basin Reservoir.

The supply canal was designed to convey 600 cfs, but only about half that amount reaches Deadman's Basin Reservoir due to seepage losses and canal restrictions. The canal crosses several drainages where 11 embankment dams were constructed rather than contouring the canal through the drainage. Two of the embankment dams have been classified as high hazard and three others as significant hazards. Several embankment dams and their concrete spillways are compromised. Seepage is a significant problem along the canal route and at the embankment dams.

Technical Approach

The project goals stated in the application are to: 1) prevent liabilities and danger to public and private property in the event of a canal failure; 2) capture, conserve, and put to better use water that is currently lost from the system; and 3) better monitor and manage the water captured by the project.

There are two components to this proposal:

1. A feasibility study of the supply canal.
2. Lining a portion of the supply canal.

The purpose of the feasibility study has four objectives:

1. Evaluate the structural integrity and assess the hazards posed by the embankment dams and the large concrete structures composing the berm on the down-slope side of the canal.
2. Estimate the cost to repair or replace the high-risk embankment dams and associated concrete structures.
3. Consider methods of optimizing the hydraulics of the supply canal so that additional water can be conserved in the reservoir.
4. Estimate the cost of constructing an O&M road that would parallel the entire length of the canal.

Three alternatives were explored for the feasibility study in the application. The preferred alternative was a combined effort of a consulting firm and DNRC SWPB staff. DNRC SWPB is too understaffed to take on the feasibility study in its entirety, and it would be very expensive to hire a consultant to perform the entire feasibility study. The preferred alternative is the most reasonable one.

The second part of this proposal is to line 1,333 feet of the supply canal that exhibit the worst seepage loss. Supply canal seepage losses are estimated at an average of 11,400 acre-feet annually. Lining the 1,333-foot section identified in the proposal would save approximately 2,080 acre-feet annually. Several alternative liners were evaluated in the alternatives analysis. The preferred alternative was an ethylene propylene diene monomer liner for its cost and durability, and previous experience with the material. The preferred alternative was adequately justified in the proposal.

The proposal offers a realistic and detailed project schedule and ample supporting documentation.

Project Management

DNRC's SWPB will provide staff in all aspects of project management, and is qualified to assume this task. There were no provisions in the project management plan for public involvement. Water users expressed support for the proposed project in a water users meeting, according to the WUA president, and written support has been provided in the application. The budget for project management appears to be underestimated, but the applicant states that SWPB has confirmed that it will absorb any cost overruns for project management.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 4,795	\$4,795
Professional & Technical	\$100,000	\$0	\$32,244	\$132,244
Construction	\$0	\$50,000	\$12,393	\$62,393
Total	\$100,000	\$50,000	\$49,432	\$199,432

The budget strategy provided in the application is reasonable. The applicant has a good working relationship with the WUA. The WUA has signed and submitted a letter of intent to increase water user assessments to repay the loan portion of this proposal.

There is no contingency built into the budget. The feasibility study appears to be estimated on the high side, while the lining project was slightly underestimated. The applicant has stated that, should cost overruns be incurred on the lining project, the difference would be adjusted by simply reducing the extent of the lining. The underestimation of lining costs was not significant enough to jeopardize the project.

Based on the WUA affordability data, long-term O&M costs would not be an issue, nor does canal lining require much in terms of O&M, but it was not addressed in the application.

Overall, the financial feasibility presentation is solid and defensible.

Benefit Assessment

The proposed project provides multiple renewable resource benefits. The lining project is the first step to saving a substantial amount of water for beneficial uses. Based on a seepage study of the supply canal, the 1,333-foot section was chosen for canal lining because the study showed seepage losses were greatest in this segment. The WUA plans future canal lining projects, which could save 8,500 acre-feet annually by lining all of the worst areas of seepage on the supply canal.

The feasibility study will address the structural integrity of the embankment dams and concrete structures that provide public safety and water conservation benefits to irrigation, municipalities, recreation, and fisheries. Water from Deadman's Basin Reservoir is the sole source of water for the town of Melstone during the dry seasons. The applicant provided ample evidence of public support for this project.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly identified and evaluated. There are no apparent adverse long-term impacts associated with this project. Short-term construction-related impacts

would end with the completion of the project. There are numerous long-term potential benefits associated with this project including public safety, irrigation, livestock, fish, wildlife, recreation, and municipal water supplies. The potential benefits far outweigh the apparent and minor short-term impacts. Permit requirements are adequately addressed.

Funding Recommendation

DNRC recommends grant funding of \$100,000, and loan funding of \$50,000 for this project upon approval of the final scope of work, administration, budget, and funding package.

Project No. 7

Applicant Name	Jefferson Valley Conservation District		
Project Name	Jefferson River Restoration Project		
Amount Requested	\$ 95,469		
Other Funding Sources	\$ 726	Local Landowners	
	\$ 35,000	MT Department of Environmental Quality 319 Grant	
	\$ 400,000	Trout Unlimited	
	\$ 8,000	USDA EQIP Funds	
Total Project Cost	\$ 539,195		
Amount Recommended	\$ 95,469		

Project Abstract (Prepared and submitted by applicant)

The Jefferson Valley Conservation District (CD) requests funding for restoration efforts by the Jefferson River Watershed Council (JRWC), a sub-committee of the district. This project builds on efforts by the Watershed Council towards restoration of the watershed for the past five years. Activities include implementation of a drought management plan, irrigation efficiency evaluation of delivery systems, water quality data collection, riparian survey of the main stem of the Jefferson River, riparian improvement projects, a groundwater study, and a canal-lining project.

JRWC was created in 1999 out of concern by the local angling community of declining fish populations and interest among local ranchers and irrigators in solving ongoing water shortages in the Jefferson River valley. The main objective of the council is to improve flow conditions in the river during critical times, and improve fisheries and overall health of the river. This project will support irrigation efficiency practices started by the National Center for Appropriate Technology (NCAT), conduct a riparian improvement project, support the council partnership with Trout Unlimited to improve efficiency of irrigation delivery systems, and support obtaining sediment and stream morphology data for the following tributaries: Hells Canyon, Big & Little Pipestone, Fish, and Whitetail creeks.

The Jefferson River supports an important trout fishery that is used by local as well as out of state fishermen. The fishery has been declining since 1999. Restoration of the important fishery as well as the general health of the river and its tributaries has important benefits for the local citizens as well as all of Montana. The council is working with other watershed groups in the area to improve conditions on the Ruby, Beaverhead, and Big Hole rivers. These rivers along with the Jefferson are the headwaters to the Missouri River. Improvements made in southwestern Montana will ultimately benefit the quality and condition of the Missouri River, an important resource to all Montanans.

Technical Assessment

Project Background

The Jefferson River, one of the headwater tributaries of the Missouri River, flowing 83.5 miles north from Twin Bridges to Whitehall, then east to Cardwell, and eventually to the Missouri River at Three Forks. The Jefferson's tributary watersheds originate high in the Tobacco Root and Highland mountains in the

Beaverhead and Deer Lodge National Forests. These tributaries include Hells Canyon Creek, Big and Little Pipestone creeks, Fish Creek, Whitetail Creek, and others.

The Jefferson River's trout fishery, which is enjoyed by local as well as out-of-state anglers, is an important part of the local economy and quality of life. Dewatering through irrigation, as with many Montana rivers, has been an ongoing problem. JRWC, a subcommittee of the Jefferson Valley CD, was formed in 1999 to address problems with the fishery, improve flows in the river during critical times, and monitor overall river health. JRWC is a local grassroots organization composed of local citizens, businesses, outfitters, sportsmen, county commissioners, ditch companies, and agricultural producers. Technical advisors include the Montana Bureau of Mines and Geology (MBMG), DNRC, MSU Extension Service, BLM, NRCS, DEQ, and DFWP. JRWC authorizes various subcommittees and work groups to address important issues and operates using a consensus-based approach to decision-making.

The proposed project will build on efforts begun several years ago by JRWC in conjunction with NCAT, Trout Unlimited, and area landowners to improve the efficiency of irrigation delivery systems and riparian conditions in the Jefferson Valley and obtain sediment and stream morphology data for the tributary streams listed above.

Technical Approach

NCAT Irrigation Efficiency Project: Annual downloading and graphing of data from existing soil moisture monitors allows NCAT staff to locate problem areas and work with irrigators to solve them. Installation of five additional monitors and fifteen sensors will aid expansion of this effort. Continuation of this effort, which NCAT is no longer funding, will provide irrigators with real-time information regarding soil moisture that can be utilized to more efficiently irrigate their crops.

Erosion control upstream of Iron Rod Bridge: NRCS staff will work with a landowner to design and install bank stabilization devices and plantings.

Sediment and Stream Morphology Data Collection: JRWC will conduct an aerial photo assessment for the Jefferson River and Hells Canyon Creek, Big and Little Pipestone creeks, Fish Creek, and Whitetail Creek. Based on the findings, sediment data and stream morphology information will be collected for stream segments that are generating significant sediment loading in the watershed.

Ongoing Trout Unlimited Project: Trout Unlimited has partnered with JRWC and obtained \$400,000 in congressional funding to study the groundwater of the Jefferson Valley and evaluate and improve the efficiency of irrigation delivery systems. Trout Unlimited has hired a full-time fisheries biologist to work in the Jefferson River watershed. The purpose of the project is to understand groundwater movement and recharge to the river from irrigation activities. Irrigation delivery system seepage losses are believed to be as high as 70 percent for some canals. More efficient delivery systems would allow more water to remain in-stream to benefit fisheries. Demonstration projects will be initiated based on the study findings.

Project Management

The project will be administered by the coordinator of JRWC, who is on contract with the Jefferson Valley CD. The CD will also be involved in administration of the contract. The JRWC coordinator has previous experience in managing contracts and projects related to the work of JRWC. Public involvement in this project will be available through monthly JRWC meetings, which are open to the public and announced in local newspapers throughout the Jefferson River drainage.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$28,565	\$0	\$3,500	\$32,065
Professional & Technical	\$66,904	\$0	\$440,226	\$507,130
Construction	\$0	\$0	\$0	\$0
Total	\$95,469	\$0	\$443,726	\$539,195

The proposed budget is clearly stated and appears reasonable in terms of the scope of work. The area potentially benefited by the project is large: DEQ has divided the Jefferson River watershed into two regions for purposes of developing water quality restoration plans. Taken together, the two regions (Upper and Lower Jefferson River Planning Areas) encompass 855,643 acres.

The RRGL grant request of \$95,469 would be matched by \$400,000 from Trout Unlimited, \$8,000 from NRCS, \$35,000 from a DEQ 319 grant, and \$726 from participating local landowners. The Trout Unlimited and 319 grants are secure, and NRCS funding (through the EQIP program) will be decided in May or June of 2005.

Benefit Assessment

The proposed project provides numerous renewable resource benefits. Continuation of the NCAT irrigation efficiency project will aid irrigators in conserving water, which will in turn keep more water in the Jefferson River to aid fisheries. The sediment data and stream morphology information will help identify and reduce sources of sediment to the Jefferson River system. The erosion control portion of the project will reduce sediment, restore the riparian area, and improve fisheries in the affected river section. The project has the potential of improving fisheries habitat, water quality, and riparian health of the Jefferson River drainage, as well as enhancing the trout fishery and recreational use of the river. Improvements made in the Jefferson drainage will ultimately benefit the quality and condition of the Missouri River, an important resource to all Montanans.

Environmental Evaluation

Major sources of impairment to the Jefferson River include siltation, thermal modification, dewatering, and fish habitat degradation. Like many Montana rivers, the Jefferson is over-allocated in respect to water rights for irrigation purposes. The proposed project will address these issues through the combined efforts of state, federal, and private funding, and expertise. Environmental impacts associated with the project have been evaluated and no long-term impacts will result. There may be some turbidity associated with the streambank restoration portion of the project, but these impacts would be short-term. Overall, the environmental health of the Jefferson drainage and the Missouri River downstream will be improved.

Funding Recommendation

DNRC recommends grant funding of \$95,469 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 8

Applicant Name	Carter Choteau County Water and Sewer District		
Project Name	Water System Improvements		
Amount Requested	\$ 100,000	Grant	
Other Funding Sources	\$ 500,000	Treasure State Endowment Program (TSEP) Grant	
	\$ 350,000	USDA Rural Development (RD) Grant	
	<u>\$ 296,600</u>	USDA RD Loan	
Total Project Cost	\$ 1,246,600		
Amount Recommended	\$ 100,000	Grant	

Project Abstract (Prepared and submitted by applicant)

The Carter water system was constructed in 1977. The source of water supply is an infiltration gallery on the Missouri River, 3 miles southeast of town. Water is pumped from the infiltration gallery through a series of three booster pump stations to pressurize the system and distribute water to users of the district. The distribution system currently consists of approximately 48 miles of 6-inch, 4-inch, 3-inch, 2-inch, and 1-inch

PVC main with associated fittings, gate valves, blowoff hydrants and air relief valves. Pumping stations are used to supply water to individual service connections within the district. The system has four pressure zones. Each zone is supplied water from a pump house. Pump house #1 is equipped with a gas chlorinator.

DEQ has classified the infiltration gallery as Groundwater Under the Direct Influence of Surface Water (GWUDISW). DEQ has mandated that the district either provide filtration, meet the criteria to avoid filtration, or permanently disconnect the infiltration gallery supply.

Arsenic and manganese samples taken at the infiltration gallery showed levels over three times the maximum contaminant levels, respectively. Over 50 leaks have been repaired in the distribution system in the past two years, sometimes appearing at a rate of 2 to 3 leaks per week. Leakage in the system and the associated repairs of these leaks puts a strain on the users of the system, as each time a leak repair is made, the entire distribution system is shut down for several days. In one case, the entire system was shut down for two weeks. This represents a serious public health threat and results in poor conservation and low efficiency of use of a natural resource. The leakage also results in unnecessarily high energy and O&M costs. The continual repair of the leaks in the system increases the possibility of contamination being introduced into the system, which is a serious public health threat.

Pump house #2 is constructed on clay material with a very poor foundation footprint. This pumphouse sits down in the bottom of a coulee, and during runoff events, the soils are saturated and the pump house begins to settle. It is anticipated that this condition will continue to worsen over time. In addition to the structural deficiencies, access down to the pump house can be difficult during the winter due to drifting snow. Pump house #2 is a critical component of the distribution system. Loss of pump house #2 would result in a total loss of water source for the district until a new building could be constructed.

Two water services at the Carter Ferry are connected to the transmission main directly outside the pump house at the infiltration gallery. Because of their location, the chlorine contact time prior to the first service connection is not sufficient to guarantee that the Safe Drinking Water Act (SDWA) mandated inactivation requirements for waterborne pathogens are met. Users of water at Carter Ferry are subjected to water that has not received adequate disinfection treatment.

This project will address the district's top five priorities. To address arsenic water quality issues, the district proposes to install point-of-use (POU) devices on each service connection. However, the POU devices do not provide the secondary benefit of filtration. To comply with the regulations associated with GWUDISW classification, the following improvements must be completed at the infiltration gallery pump house to meet the criteria to avoid filtration: Installation of sample pump and sample line to allow for collection of samples prior to chlorination, chlorine residual monitor, turbidity monitor, flow meter, and an in-line UV disinfection unit. The gas chlorinator must be updated to liquid chlorination for safety reasons. Approximately 80 feet of 24-inch pipe will be installed to provide sufficient chlorine contact time prior to the first service connection. Water meters will be installed on all service lines.

To address the distribution issues, the district proposes to relocate pump house #2, replace 4,000 feet of 6-inch main line between pump house #2 and pump house #3 and replace 32,000 feet of 3- and 4-inch main line between pump house #3 and pump house #4. The estimated project cost is \$923,400.

Technical Assessment

Project Background

The Carter Choteau Water and Sewer District is located in southwest Choteau County, approximately 28 miles northeast of Great Falls, and serves an agricultural community of about 200 people. The public water supply for the district is an infiltration gallery located along the banks of the Missouri River, about three miles southeast of the Carter community. Gas chlorination for disinfection and polyphosphate addition for the sequestering of manganese are the only treatment techniques used. The water system, installed in 1977, includes 48 miles of distribution piping and a series of three booster pump stations. The distribution pipe leaks heavily, with over 50 leaks repaired in the past two years. Lateral cracking in the early polyvinylchloride (PVC) pipe, made before the manufacturing process was perfected, is blamed for the problem. Leak repair has been a huge financial burden on the district and an inconvenience when the public is without service during pipe repairs. Each home is supposed to utilize a cistern and hydropneumatic pressure tank to

maintain adequate home pressures, but only half of these have been in service. DEQ has classified the source GWUDISW. This classification requires the district to provide filtration, abandon the source, or meet criteria to avoid filtration. The district has chosen to meet the necessary criteria to avoid filtration and keep its water source.

Other problems also exist for the district. The district must also address the high arsenic levels, and is required to meet the SDWA's new arsenic Maximum Contaminant Level (MCL) of 0.01 ug/l by January 2006. Arsenic is a known human carcinogen that contributes to cancers of the skin, bladder, and lungs. Another problem is that pump house #2 is located in a coulee, is settling differentially, and is difficult to access in the winter. There are two service connections at Carter Ferry immediately after pump house #1, which receive chlorinated water that has not had adequate contact time, as required under the SDWA for pathogen inactivation. Manganese, a secondary contaminant, is at nuisance levels in the system and is not adequately handled with the current sequestering process.

Technical Approach

A primary project goal is to comply with the SDWA Criteria to Avoid Filtration (40 CFR 141.71) for the district's GWUDISW system and to comply with the MCL for arsenic. Better removal of manganese was also cited as a goal of the proposed project. In addition, the district wants to eliminate the massive leakage from the failing PVC pipe in its distribution system. Meters are proposed so that the district has access to Rural Development (RD) funding. Meters will encourage conservation, help tabulate the amount of water leakage, and provide an equitable basis for collecting water fees. One last aspect of the proposed project is the relocation of pump house #2 out of the coulee.

Eight alternatives were considered for treatment of the GWUDISW, arsenic-laden source water. Given the newness of some of the technologies and due consideration to accepted treatment technologies, the alternative analysis seemed thorough. Seven alternatives provide various arsenic treatment technologies at the water source and can provide the benefits of filtration and manganese removal. The eighth alternative includes the installation of a POU device at each home to remove arsenic and improvements at the water source to meet the criteria to avoid filtration. It is the alternative chosen by the district. There will be no change in the treatment of manganese as a result of this project.

Since the POU devices do not provide filtration, improvements to meet the criteria to avoid filtration are necessary. If for some reason 40 CFR 141.71 cannot be met, then the district must install filtration or find another water source.

The chosen alternative proposes to use ultraviolet (UV) disinfection at the source as a solution to meeting future regulations under the SDWA's Long Term Enhanced Surface Water Treatment Rule. The rule is still undergoing modifications and is not yet finalized. Installation of UV disinfection may not be the correct solution for the district to meet rule, and it might be a good idea to postpone UV design until after the rule is finalized. The cost of UV installation is approximately \$81,000, which could perhaps be better spent now on more water main replacement. Providing a location available to install UV in the future, should the need arise, would be an appropriate step in this project.

Project Management

The project management plan identifies adequate and capable staff to manage the proposed project. The district's board of directors will be responsible for the ultimate management of the project. A project manager will be chosen after a formal procurement process. This position will also be responsible for the day-to-day management of contracts and agreements. This district was newly created in February 2003 and since then has successfully managed preparation of the Preliminary Engineering Report (PER). The district assumed \$182,000 in debt from a sewer main replacement project completed when the wastewater system was still controlled by the county as a Rural Special Improvements District. With assuming responsibility for the loan and initiation of the PER process, board members have shown their commitment to the project and their willingness to accept responsibility to see the project through.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$26,180	\$26,180
Professional & Technical	\$20,000	\$0	\$92,340	\$112,340
Construction	\$80,000	\$0	\$1,028,080	\$1,108,080
Total	\$100,000	\$0	\$1,146,600	\$1,246,600

The proposed budget for the project is straightforward and reasonable. The funding package is dependent on grants from the TSEP, DNRC, and USDA RD Programs, and a \$296,600 USDA RD loan will be obtained. The district has already discussed funding of the project with RD program staff, and an RD Letter of Conditions has been issued. The proposed project will address the top five priority projects at a cost of \$1,246,600. Installation of backup power at each pumphouse and completion of another phase of distribution main replacement will occur later, since it is cost prohibitive to include it in the project scope at this time.

O&M expenses are expected to increase by \$1,657 per month. Currently the rural users pay a flat \$86.00 per month for water service and Carter community users pay a flat \$59.00 per month. It is anticipated that this dual rate structure will be abandoned and that both the rural users and the Carter users will pay the proposed new rate of approximately \$110.00. Once the meters are installed, the district would charge a base rate and then assess a fee for each additional 1,000 gallons of usage. This is a fair basis since water is used for stock watering and agricultural spraying at some homes.

Benefit Assessment

The proposed improvements will allow the existing water supply to meet current SDWA standards for arsenic and GWUDISW and reduce leakage from the distribution system. This will keep the water system in service for the community and allow for better management. Meter installation at each home will encourage conservation from homeowners. Replacing almost seven miles of the leaking water mains will result in better and more efficient utilization of the water supply. In addition, energy, operation, and maintenance costs should decrease. Pipe repairs bring a risk of contamination into the water system, thereby posing a health threat. By repairing large sections of faulty pipe, pipe repairs should be brought to a more reasonable level to help alleviate this concern. There are no other feasible alternatives for a public water supply in the Carter area, since groundwater is scarce and connection to a regional water system is not an option at this time.

Environmental Evaluation

This project will have an overall beneficial affect on the environment. Water leakage from the cracked PVC distribution pipes should be greatly reduced, thus conserving water. There is a petroleum release site near the Farmers Union Oil Bulk Plant, and one of the district's water mains runs through the site. This water main will be rerouted around the problem area as part of the Phase 2 distribution system improvements. Water main crossings of coulees and intermittent channels will require permits from the U.S. Army Corps of Engineers. Crossing of wetland areas along some drainages will also require permits. There is an active bald eagle nest located within three miles of an area of proposed construction activities, which may require some further attention, but this is not expected to delay or impact the project.

During construction, there will be short-term adverse impacts on air quality because of dust and exhaust fumes. There will also be noise during construction. Mitigation efforts will minimize these nuisances.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 9

Applicant Name	Sheridan, Town of		
Project Name	Water System Improvements		
Amount Requested	\$	100,000	Grant
Other Funding Sources	\$	500,000	Community Development Block Grant (CDBG)
	\$	461,400	Drinking Water State Revolving Fund (DWSRF) Loan
	\$	500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	\$	1,561,400	
Amount Recommended	\$	100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Sheridan water system, portions of which date back to 1915, consists of several components, including four operating water wells, the distribution system, transmission main, and two water storage reservoirs. The Sheridan water system currently has 397 service connections.

The existing distribution system consists of mains ranging from 1-1/2 to 10 inches in diameter and made of galvanized iron, cast iron, asbestos cement, and PVC. Due to the age of the system, leakage is significant. The operator has repaired 44 leaks over the past two years. The leakage in the system results in poor conservation and low efficiency of use of a natural resource. The leakage also results in unnecessarily high energy and O&M costs.

Because of the extreme water losses in the system, demands during peak periods exceed current pumping capacity, resulting in a complete loss of water service to residents on the upper portion of the system, as well as loss of fire protection to the entire town due to complete dewatering of the storage tanks.

Inadequate supply and storage and old, undersized water mains allow system pressures to drop below 20 pounds per square inch during high-demand periods, increasing the potential for backflow and contamination of the public water supply from outside sources. The existing concrete storage tank is in need of repairs, including leak repairs and a new roof. The existing steel tank needs to be recoated, both inside and out.

DEQ has rated the town's well field as "high hazard" due to the entire water supply being susceptible to contamination from a single incident, as all of the water supply wells are located in the same proximity.

The town proposes to replace leaking, undersized water lines with 4,600 feet of 8-inch PVC and 8,000 feet of 6-inch PVC, along with new fire hydrants, gate valves, and water services. The improvements will significantly reduce water losses in the distribution system. The interior of the concrete tank will be seal-coated and a new metal roof will be installed. The steel tank will be recoated. Service meters will be installed on nine high-volume water users on the system, for management purposes. A test well will be completed as the first step in developing another water source located away from the existing well field.

Technical Assessment

Project Background

The Town of Sheridan is located approximately 20 miles northwest of Virginia City, the Madison County seat, along Montana Highway 287 in the Ruby River Basin. The 659 residents of Sheridan are served with both public water and wastewater systems. The original water system was constructed in 1915, with significant updates completed in the early 1940s. The unmetered water system consists of four operating wells, the distribution and transmission mains, a 300,000-gallon steel tank, and a 70,000-gallon concrete reservoir. Due to the age of the system, leakage from the water mains is significant. In 2003, the town spent \$260,000 to replace its 70-year old, 14-inch leaking wooden transmission main. Over the past two years, more than 44 leaks have been repaired. During the peak water season between May and September, the wells have not been able to meet water demand and maintain water storage levels. The town has instituted watering restrictions during these months on an annual basis, in the hopes of maintaining adequate storage and system pressures for fire-fighting purposes and domestic needs. In addition to the problems with inadequate

well capacity and leaking water mains, the existing storage tanks are in need of repairs. Additional capacity is also required to meet recommended fire flow requirements.

Technical Approach

The project goals are to provide enough water to meet demand during the summer irrigation months of peak use, to perform maintenance on the existing water storage tanks, to provide adequate storage for fire protection and to replace leaking distribution lines. Two alternatives were looked at in detail for water supply: development of a new well field in the shallow aquifer; and development of a new well in the deeper aquifer. The alternatives of using Indian Creek Springs or surface water were eliminated due to a lack of adequate quantity and the high cost of a treatment plant, respectively. The chosen alternative is drilling a new well in the deeper aquifer. However, in the Phase I improvements, a test well into this aquifer will be drilled, with the public water supply well proposed for Phase II. Three alternatives were looked at for storage: an elevated steel tank, an on-grade steel tank, and an on-grade concrete tank. Discussion in the Preliminary Engineering Report (PER) justifies the addition of 80,000 gallons to the water system to provide needed fire flow to the majority of the town's structures. The chosen alternative is construction of an on-grade concrete tank as a Phase II improvement. A hydraulic analysis of the distribution system was completed to evaluate the most effective modifications, and almost 19,000 feet of water main were identified for replacement. This large amount precludes the town from completing all necessary main replacements in one project. The first phase will enlarge core mains needed to satisfy fire supply needs to high flow areas, particularly in the commercial district.

A water meter analysis completed in the PER concluded that it was not feasible at this time to meter all services, because there are higher needs with the water supply, storage, and distribution systems. Just nine meters will be purchased and installed under Phase I improvements on high-volume water users in Sheridan.

The design basis for all of the analyses in the PER is 444 gallons per capita per day (gcpd), derived from an average of water usage in three unmetered Montana communities. This results in a 2024 average daily water demand of 220 gallons per minute (gpm). According to the PER, 195 gcpd is reasonable water usage in small, metered Montana communities. This amounts to a 2024 average daily demand of only 97 gpm for Sheridan and a maximum day demand of 175 gpm. Assuming these flows to be realistic, if the Town of Sheridan were metered and all major leaks were repaired, then the existing water supply wells could meet demand throughout the year. The capital cost of installing meters in the town is about 85 percent of the cost of a test well, a new water supply well, and maintenance of the water tanks. Maintenance of the tanks is a task normally covered through the water system budget. It would have been helpful to compare and analyze the needed improvements with respect to each other in order to justify how improvements were prioritized.

Improvements to be completed under the proposed project (Phase I) are maintenance on the existing tanks, completion of a test well, replacement of 12,600 feet of distribution pipe, and installation of water meters on nine high-volume commercial water users.

Project Management

The Town of Sheridan has contracted with the project engineer to manage and administer the proposed project. All roles of the project management staff were well defined in the project management plan. The engineer's duties include project design, overseeing construction, grant administration, and funding agency coordination. The mayor will have primary responsibility for overseeing and monitoring consultant and contractor work. Progress reports will be presented by consultants at monthly town council meetings. The public will be kept informed of the project through newspaper articles, newsletters, and open town council meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$58,700	\$58,700
Professional & Technical	\$0	\$0	\$28,000	\$28,000
Construction	\$100,000	\$0	\$1,374,700	\$1,474,700
Total	\$100,000	\$0	\$1,461,400	\$1,561,400

The budget strategy provided in the application is reasonable. The applicant is a local government with the ability to collect charges for debt and operation. Current residential charges for water service are \$25.00 per month. The projected residential rate is \$30.86 per month and will affect all 385 households. This new water rate, when combined with the existing sewer rate of \$6.00 per month, equals 101 percent of the combined target rate. The town council and residents have made it clear through public meetings that \$31.00 per month is the maximum the community can afford. The Uniform Application indicates that O&M costs will decrease by \$1,925 per month (or \$4.55 per user) because of the proposed project. According to the project engineer, the actual annual O&M expenses have averaged \$60,000, which raises expenses to \$72,600. Since the past year has seen higher than average O&M expenses due to major expenditures, there appears to be a decrease in O&M expenses.

The median household income for Sheridan is fairly low at \$21,118, and so a reluctance to increase water rates is understandable. The PER justifies not using meters because this would cost the town \$10.00 to \$11.00 per user per month. However, once the improvements are made, metering would encourage better water conservation.

Cost estimates were provided for the options considered for each of the project components and were used to help determine preferred alternatives for water supply and water storage. Engineering costs are based on bid tabulations or contractor quotes for similar projects in Montana.

The city is proposing to finance the project with TSEP, CDBG, and DNRC grants and a DWSRF loan. If one or more grants are not received, the town would most likely reduce the scope of the project accordingly.

Benefit Assessment

The proposed project will benefit all residents in Sheridan through a reduction in water distribution system leakage and an upgrade of the water storage tanks. Because of the proposed Phase I improvements project, the town may be able to reduce watering restrictions during the summer months. It is not expected that watering restrictions can be fully lifted until a permanent public water supply well, a new storage tank, and additional distribution main replacements are constructed in the second phase of the proposed improvements. Public support is evidenced through letters from community businesses, institutions, and individual residents. The Town of Sheridan prepared a Growth Policy Plan in August 2003. The policy recognized the continued demand for improvements to the public water system as one of the primary needs to allow growth. The existing water system will be preserved for future use because of the proposed project.

With meter installation listed as the eighth priority item in the list of recommended improvements, two phases past the scope of this project, it is doubtful that meters will be installed anytime in the near future, especially with the reluctance of residents to realize any rate increase. Installation of water service meters commonly will result in a lower water demand through improved conservation. The town has not been able to account for water system leakage and, without meters, it will not be able to do so and thus better manage the system.

Environmental Evaluation

Environmental impacts associated with the proposed project were thoroughly evaluated and no apparent adverse long-term impacts were identified. The project will cross Mill Creek, thus possibly impacting wetlands, a floodplain, the local fishery, and surface water. The PER acknowledges that permits may be required before construction can begin near Mill Creek. The negative environmental impacts will be short-term and construction related – excessive dust, noise, vehicle exhaust, and fumes. The overall impact of the

project will be positive, with the repair of leaky mains, thus resulting in the more efficient use of groundwater resources.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 10

Applicant Name	Lower Yellowstone Irrigation Project Board of Control		
Project Name	Lower Yellowstone Canal Control Project		
Amount Requested	\$ 100,000	Grant	
Other Funding Sources	\$ 336,042	Applicant	
Total Project Costs	\$ 436,042		
Amount Recommended	\$ 100,000	Grant	

Project Abstract (prepared and submitted by applicant)

The Lower Yellowstone Canal Control Project proposes to install seven automatic check structures in the 72-mile main canal system. Check structures are devices that hold water back in an irrigation canal to control the water level so that diversions to farmland can be made under low-flow conditions.

Periods of low irrigation demand for water in the 95 year-old system cause a water management problem. Low demand periods can occur due to rains, cropping patterns, and the introduction of sprinklers. To make the remaining canal diversions, excessive water must be run through the system. This creates a non-prudent use of water.

There are approximately 21 miles of natural drainage that convey surplus water from main canal spillways back to the river. There is some non-quantified erosion on about one-third of the drainages.

This project will improve our ability to control a water resource and conserve it for other uses. It is estimated that the project will reduce diversions by 25,000 acre-feet annually.

Technical Assessment

Project Background

The Lower Yellowstone Irrigation Project (LYIP) is located along the west side of the Yellowstone River near the North Dakota border, stretching from Intake Diversion Dam north of Glendive to near the confluence with the Missouri River. USBR constructed the canal and lateral systems in 1907-1909. The system entails 72 miles of main canal serving 53,300 irrigated acres. Fluctuating demands for water in this large irrigation system make water management difficult. The focus of this project is the installation of check structures to allow better water use management.

Technical Approach

The goals of this project are to improve irrigation water use efficiency, reduce return flows to the Yellowstone River and subsequent soil erosion in the wasteways, and reduce the amount of water diverted from the river.

The objective of the grant project is to install automated check structures in the main canal.

Even when demand for water in one part of the system is decreased, the full amount of water must be kept in the ditch to keep the water level high enough to run water through the headgates to irrigate other parts of the

system. The check structures would allow the water level to be maintained using less water, resulting in a savings of up to 25,000 acre-feet of water per year. In addition, less water would be spilled through the wasteways, resulting in less erosion and sediment in the river.

The application considered three alternatives, including "no action." The alternative selected is the most economically and technically feasible. The project's construction work will be completed using LYIP staff and equipment. The ready-mix concrete, gates, and controllers will be purchased from known vendors. The project schedule is documented with completion expected by 2007.

Project Management

The LYIP manager, a professional engineer, will manage construction as well as carry out administration of all aspects of the project. The LYIP Board of Control will review and approve budgets, final plans, and supply contracts.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$11,800	\$11,800
Professional & Technical	\$0	\$0	\$8,000	\$8,000
Construction	\$100,000	\$0	\$316,242	\$416,242
Total	\$100,000	\$0	\$336,042	\$436,042

The budget appears to be sufficient to fund the project. Material, labor, and equipment costs used to develop the budget appear reasonable and adequate. The costs of the alternatives presented were developed in a consistent manner. The selected alternative appears to be the most cost effective.

The proposed funding package is a reasonable mix of state and local funds. Local contributions will be in the form of in-kind work/services and funds.

The application indicates a total of 53,300 acres will be affected by the project. LYIP reserve funds used toward the project will be repaid by increasing the per acre assessment by \$1.30 over a four-year period. The total assessment will be increased to \$25.80.

Benefit Assessment

Long-term renewable resource benefits include management of water resources through improved canal operation to allow reduction of wastewater for more efficient water use. This will result in a reduction in water diverted from the river as well as reduced soil erosion in wasteways. Resource conservation, protection, and development benefits will also be realized as a result of the improved operation. Quantification of water use will be assisted by use of the new water level monitoring system as well as existing flow meters in the irrigation system.

Environmental Evaluation

No known long-term environmental impacts should occur from this project. Detailed information regarding wetlands, threatened and endangered species, soils, and water quality must be addressed in the final design report. The project sponsor must obtain all necessary permits.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 11

Applicant Name Montana Department of Natural Resources and Conservation (DNRC)
Project Name Frenchman Dam Rehabilitation Feasibility Study

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 65,400	Applicant (In-Kind Professional Services)
Total Project Cost	\$ 165,400	

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Frenchman Dam is located about 22 miles north of Saco. The project is situated on Frenchman Creek, a tributary of the Milk River, in Phillips County. The drainage area behind the dam encompasses 2,460 square miles. The DNRC-owned dam is operated and maintained by the Frenchman Water Users Association. The dam is 44 feet high and 2,100 feet long with a dike on the west end that is 8 feet high and 1,000 feet long.

The original earthfill dam was first completed in 1951. The dam failed on April 15, 1952, due to very high stream flows resulting from rapid snowmelt, causing a very rapid filling of the reservoir. The dam was reconstructed in 1952-1953 with a larger spillway and revisions to the seepage cutoff. Annual dam safety inspections have discovered voids that developed underneath the spillway. Temporary repairs have been made to avert additional erosion. Cracking and spalling concrete and deteriorating and offset joints are evidence for the declining operational condition of the spillway. The storage capacity of the reservoir has been reduced by about 50 percent due to years of sedimentation.

DNRC's State Water Projects Bureau (SWPB) and the Frenchman Water Users Association propose a feasibility study to evaluate the known problems at Frenchman Dam while incorporating an investigation to identify other potential problems. The feasibility study would also identify and outline mitigation and rehabilitation alternatives for the project.

The funding in this request would be used to help pay for flood hydrology, water availability evaluations, drilling, and installation of seepage monitoring wells. DNRC is requesting a \$100,000 Renewable Resource grant. SWPB will assume a lead role in project management, intending to contribute approximately \$65,000 of in-kind technical services. The estimated cost of the feasibility program is approximately \$165,000.

Technical Assessment

Project Background

Located 22 miles north of Saco in Phillips County, Frenchman Dam was constructed in 1951 by the Montana State Water Conservation Board. The earthfill dam is operated and maintained by the Frenchman Water Users Association under agreement with DNRC, and provides storage for the irrigation of approximately 7,000 acres. In the spring of 1952, the dam failed as the result of an excessively fast snowmelt and rapid filling of the reservoir. Dam reconstruction was completed in 1953.

Annual dam safety inspections have revealed voids under the reconstructed spillway. Temporary repairs have been made, but the spillway has cracked, spalled, and otherwise deteriorated structurally. Additionally, siltation has reduced the capacity of the storage reservoir from 7,010 acre-feet to 3,752 acre-feet, a storage loss of nearly 50 percent.

This project is to conduct a preliminary engineering study, or feasibility study, to evaluate the structural integrity of the dam and associated structures, determine spillway deficiencies, identify and mitigate seepage problems within the dam, and make recommendations to increase the storage capacity of the reservoir.

Technical Approach

The project goal is to conduct a preliminary study to identify and recommend improvements to Frenchman Dam. The resulting rehabilitation project would ensure the upgraded and safe operation of the dam for

another 50 to 75 years. The study will be managed and performed in part by DNRC staff engineers. The majority of the engineering work will be conducted by a consulting firm competent in dam work under contract with the DNRC Water Resources Division, State Water Projects Bureau. The main components of the project include:

1. The identification of deficiencies and the recommendation of optimal rehabilitative efforts to minimize improvement costs while not compromising safety;
2. The determination of spillway improvement or replacement options;
3. The identification of seepage within the dam and the determination of internal drain requirements;
4. The determination of feasibility to raise the crest of the dam to increase reservoir storage capacity; and
5. The installation of a monitoring well network to observe seepage and ensure the safe continued operation of this high hazard dam.

These components will be achieved through implementation of the following tasks:

1. A review of technical data maintained for Frenchman Dam;
2. A geotechnical investigation and report;
3. A hydrologic investigation to facilitate spillway design and the consequences of a breach;
4. An economic study to determine the ability of the water users to repay any money borrowed for the actual construction project recommended by this study;
5. A cultural resource inventory of the area potentially affected by the study or resulting project; and
6. Management of all aspects of the study.

Alternatives were considered for various study management scenarios. The dam is owned by DNRC and is operated by the Frenchman Water Users Association. It is recognized that major improvements must be overseen by DNRC. The preferred alternative is to procure the services of a consultant or firm experienced in the design, evaluation, and rehabilitation of earthfill dams with oversight by DNRC staff engineers.

It is proposed that the study commence following legislative funding authorization in 2005, with completion in the spring of 2006.

Project Management

SWPB staff will take the lead in project management and, based upon previous dam rehabilitation projects completed by DNRC, they are well qualified for the task. The project budget allows for funding to support the department in the administrative aspects of the project. Field data collection and the actual feasibility study will be performed by the consulting engineer. DNRC will keep the Frenchman Water Users Association informed during the study and development of the project and will continue to do so during the design and construction phases.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$14,000	\$14,000
Professional & Technical	\$100,000	\$0	\$51,400	\$151,400
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$65,400	\$165,400

The budget strategy provided in the application is reasonable. Cost estimates were provided for the preliminary engineering scenarios considered for the study and were used to help determine the preferred methodology. Engineering costs are within the typical range for a study of this magnitude.

Upon completion of the study, funding will be applied for to actually design, bid, and construct the necessary improvements. At this time, a loan/grant combination will probably be applied for. The loan component, or a portion thereof, will be the responsibility of the Frenchman Water Users Association under the terms of a repayment agreement with the DNRC Water Resources Division, State Water Projects Bureau.

Benefit Assessment

Frenchman Dam and the reservoir it impounds provide multiple renewable resource benefits. Due to siltation and structural deterioration, these benefits will be lost unless the dam is rehabilitated. The study to be funded with this grant will identify and optimize work necessary to most economically bring the facility up to standards for another 50 to 75 years.

It is anticipated that an increase in storage capacity will result from the findings of the study. This will most likely involve raising the crest of the dam. Better resource conservation and management will result from the increased storage of spring runoff for later use during the irrigation season. By reconstructing the spillway to current standards, the risk of a life-threatening breach will be reduced, resulting in public safety benefits to those living downstream from the dam.

Additionally, this facility will cease to provide any benefits unless improvements are made due to its high-hazard classification. Accordingly, the preservation of multiple renewable resource benefits will be afforded as the result of this feasibility study and the resulting improvement project.

Environmental Evaluation

Any adverse environmental impacts associated with this study will be minimal. The resulting improvements project will not have long-lasting adverse impacts. However, there will be the typical construction impacts associated with most construction projects. Included will be noise, dust, and short-term surface water quality degradation below the dam. Construction impacts will be evaluated during the design and approval stages of the actual improvements project that will result from the findings of this study.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 12

Applicant Name	Montana Department of Natural Resources and Conservation (DNRC)	
Project Name	Martinsdale North Dam Riprap Program	
Amount Requested	\$ 100,000	Grant
	\$ 80,340	Loan
Other Funding Sources	\$ 28,598	Applicant (In-Kind Professional Services)
Total Project Cost	\$ 208,938	
Amount Recommended	\$ 100,000	Grant
	\$ 80,340	Loan

Project Abstract (Prepared and submitted by applicant)

Martinsdale Reservoir is an off-stream storage project owned by DNRC. The reservoir, completed in 1939, has two "high hazard" earthen embankment dams (East Dam and North Dam). The reservoir is located about 2.5 miles southeast of Martinsdale and stores 23,348 acre-feet of water. Water from the reservoir is used primarily for irrigation, but is also used for water-based recreation.

The outlet works is located through the North Dam near the right abutment. It consists of an intake structure, a 60-inch diameter reinforced concrete pipe tunnel, a dry tower with an operating gate and an emergency gate, and an outlet structure.

The inlet to the outlet conduit has had a recurring problem with plugging. The inlet structure plugged in 1989, 2000, 2001, and 2002. The most serious incidence occurred in September 2000. The plug was removed by

water jet cleaning of the outlet conduit from the downstream side and pumping water into the inlet tower. About 200 cubic yards of sand, silt, and gravel was removed from the outlet conduit and intake structure. Since 2000, \$95,573 has been spent unplugging the conduit and excavating sediment from around the intake structure.

The blockage on the inlet tower and the upstream portion of the conduit is caused by wave erosion of sand and cobble material from the right abutment. The purpose of this project is to place riprap on the right abutment slope above the intake structure to stabilize this slope and eliminate continued plugging of the intake structure.

Technical Assessment

Project Background

Completed in 1939, the Martinsdale Reservoir is an off-stream storage project owned by DNRC and managed by DNRC's State Water Projects Bureau (SWPB), with O&M performed by the Upper Musselshell Water Users Association. The project is located about 2.5 miles southeast of the town of Martinsdale on the county line between Meagher and Wheatland Counties. Water from the reservoir is used primarily for irrigation with the reservoir supporting a lake fishery and water-based recreation. The project stores 23,348 acre-feet of water serving 55 users in the Upper Musselshell Water Users Association. The delivery of stored irrigation water is vitally important to the farm/ranch operations of the water users.

The 60-inch diameter outlet conduit at the North Dam has suffered a recurring problem of plugging with materials eroded from the hillside above the inlet to the conduit. This is particularly a problem during low water levels, which has extended over the last 5+ years of drought conditions. The conduit plugged in 1998, 2000, 2001, and 2002. In 2000, the plugging was severe and extensive effort was required to remove about 200 cubic yards of sand, gravel, and cobbles from the conduit. The water users have attempted frequent flushing flows with limited success in an effort to prevent plugging. The water users completed removal of 3,000 cubic yards of material from around the inlet in 2001 and another 2,900 cubic yards in the spring of 2004.

The proposed project will involve the excavation of 4,350 cubic yards of material from around the intake structure and installation of 1,940 cubic yards of riprap to prevent future erosion of the slope above the intake.

Technical Approach

The project goal is to eliminate the continued blockage of the outlet conduit, which will reduce maintenance costs, conserve water resources for irrigation and recreation, and maintain the safety of the dams in conformance with current dam safety standards. The main components of the project are to:

1. Draw the reservoir down to the dead pool of approximately 300 acre-feet following the irrigation season;
2. Excavate the sand, gravel, and silt from around the intake to the outlet conduit;
3. Excavate the slopes directly above the intake to improve the stability;
4. Place filter gravel or filter fabric on the slope
5. Place new riprap over the filter; and
6. Include a berm that varies from 3 to 7 feet high along the top of the new riprap to catch eroded material and help stabilize the slope above the riprap.

Several alternatives, including "no-action," were considered for this project. The preferred alternative was selected based upon initial cost, performance, and present worth analyses.

The "no action" alternative would perpetuate the existing need for flushing flows (lost water), maintenance, and the risk of future plugging. Other options considered included excavation with no riprap, which had much higher life cycle costs; extending the tower, which reduced the storage by 3,871 acre-feet and resulted in the highest life cycle costs; and extending the conduit further into the reservoir, which had the highest initial cost and life cycle costs much higher than the selected alternative.

Project Management

DNRC SWPB staff will take the lead in project management and, based upon projects completed by the SWPB, are well qualified for the task. The project budget allows for funding of the administrative aspects of the project as an in-kind contribution from DNRC. Construction management will be performed by SWPB, which has completed similar projects in recent years. The primary public involvement is coordination with the water users and DFWP. SWPB has kept the public informed during the development of the project and will continue to do so during the design and construction phases.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$5,991	\$5,991
Professional & Technical	\$0	\$0	\$22,606	\$22,606
Construction	\$100,000	\$80,340	\$0	\$180,340
Total	\$100,000	\$80,340	\$28,597	\$208,937

The budget strategy provided in the application is reasonable. The applicant is a government agency and has the ability to collect charges for debt and operation. Current water user rates are \$6.50 per share per year and the projected rate is \$6.78 per share per year, and will affect 55 water users. This will result in an average increase of about \$107.50 per water user.

Cost estimates were provided for the options considered and were used to help determine preferred alternatives. Engineering costs are based on SWPB internal costs and are reasonable for a project of this magnitude. If administrative, professional, and technical costs are higher, the extra cost will be absorbed from DNRC's operating budget. The construction cost estimate includes a 10 percent contingency for unanticipated costs.

Benefit Assessment

The proposed project provides multiple renewable resource benefits. The current situation requires frequent flushing of the outlet with associated loss of stored water. The stored water serves local irrigation, provides recreation opportunities, and maintains the reservoir fishery. The grant application includes documentation that the selected alternative provides the greatest benefit (least cost) of all alternatives evaluated. Letters submitted with the grant application substantiate public involvement and support for the project.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. The beneficial results are primarily related to reducing or eliminating the need for future flushing flows and reservoir drawdown for maintenance. This will better maintain the fishery and reduce fuel consumption for future maintenance. The project will improve safety considerations of the dams for the downstream public.

Short-term, construction-related impacts will be controlled through permitting and proper construction methodology.

Funding Recommendation

DNRC recommends grant funding of \$100,000, and loan funding of \$80,340 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 13

Applicant Name Seeley Lake Sewer District
Project Name Wastewater System Improvements

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 500,000	Community Development Block Grant (CDBG)
	\$ 500,000	Treasure State Endowment Program (TSEP) Grant
	\$ 2,000,000	U.S. EPA State and Tribal Assistance Grant (STAG)
	\$ 1,370,000	USDA Rural Development (RD) Grant
	<u>\$ 262,445</u>	USDA RD Loan
Total Project Cost	\$ 4,732,445	

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Seeley Lake area is one of the largest unincorporated communities in Montana. Drinking water for the area is provided by a central water system with its source coming from Seeley Lake. Wastewater in the area is managed by individual on-site wastewater treatment systems. Septic tank density is very high in the core area of the community. Groundwater studies performed by MBMG have documented elevated nitrate levels in the areas of high septic tank density. These same studies have also found degraded water quality in Seeley Lake, indicated by increased algae concentrations and increased turbidity. Additional groundwater monitoring performed by the sewer district confirms the presence of elevated nitrates, phosphorus, and fecal coliforms in the groundwater downgradient of the community. To protect public health and recreational quality, it is imperative that the impact of current wastewater management practices on groundwater and surface water quality be eliminated and a central sewer system installed.

Additionally, many of the existing on-site drainfields are old and in need of replacement. The problem with replacement drainfields is exacerbated by the fact that most of the lots are small. Several of the larger commercial facilities have had difficulty satisfying on-site regulations due to insufficient space to meet county regulations, shallow groundwater, and non-degradation requirements. These conditions limit both residential and commercial growth in the community.

The proposed solution would involve abandoning the existing on-site septic tank/drainfield systems and replacing them with a conventional gravity (8-inch minimum diameter pipes with manholes) collection system. The collection system would flow to a lift station, at which point the sewage would be pumped to an aerated treatment lagoon followed by a storage cell. The treated effluent would be discharged using spray irrigation in the summer months to the adjacent forest.

Technical Assessment

Project Background

The Seeley Lake Sewer District encompasses the unincorporated community of Seeley Lake and the surrounding area. There are currently 312 residential homes within the district. Residents use on-site septic systems for the treatment and disposal of sewage. The on-site systems have impacted the quality of the area's groundwater and are impacting the water quality of Seeley Lake. Independent studies verifying the impact of the district's septic systems on the area's water resources have been included with the application.

Technical Approach

The PER contains an alternatives screening section that screened 13 major wastewater treatment alternatives. The treatment alternatives that were evaluated in detail included treatment lagoons with storage and disposal by irrigation, treatment lagoons with storage and disposal by irrigation and snowfluent (snow making), treatment lagoons with storage and disposal by snowfluent only, and advanced mechanical treatment with surface water discharge. Both facultative (no mechanical aeration) and mechanically aerated lagoons were evaluated. The alternatives analysis section also evaluated three collection system alternatives: standard gravity collection, small diameter gravity collection with individual septic tanks, and a

pressurized collection system. The PER went through a detailed alternative analysis for both the wastewater treatment system and collection system.

The recommended treatment and disposal alternative for the project is an aerated treatment lagoon with storage ponds and effluent disposal by irrigation. This alternative was the most cost effective, had less potential for producing odor problems, did not require a discharge permit, and allowed beneficial re-use of the treated wastewater effluent. The treated wastewater effluent will be used to irrigate a tract of timber that will be periodically harvested. The recommended collection system alternative is a gravity collection system. It is the most cost-effective and O&M friendly alternative. It also completely eliminates the need for septic tanks, which are still required for the other two alternatives. A clear comparison of all alternatives was provided that supported the selection of the preferred treatment and collection system alternatives. The recommended alternatives will reduce or eliminate the water quality impacts on the area groundwater and Seeley Lake.

The proposed timetable is reasonable for a project of this type. Design of the improvements and DEQ approval will be completed by August of 2006. Construction is scheduled to start in the spring of 2007 and will be complete by the spring of 2008. The schedule may have to be revised if all of the proposed grant funding is not secured so that grant applications can be re-submitted in subsequent application cycles.

The PER included several independent studies documenting the contamination of groundwater by the on-site septic systems in the district. The district recently completed additional aquifer testing, and the results verifying the aquifer contamination issues were included in the PER.

Project Management

The applicant has a sufficient staffing plan for the project. The district's chairman will have ultimate authority for the project. The district manager will serve as the day-to-day project manager. The Missoula County grant administrator will be responsible for coordination with the funding agencies and will verify that all agency requirements are met. The grant administrator will also be responsible for setting up the required project files for the funding agencies and will serve as the environmental certifying officer. The district has an attorney who can be consulted for legal matters. The project engineer will perform the design and construction administration for the project.

Public involvement is part of the project management plan. Several public meetings and hearings have been held over the last two years. Several newspaper articles have been written that discuss the project as well as the results of the public meetings. Letters from the public supporting the project were included in the application.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$68,500	\$68,500
Professional & Technical	\$22,000	\$0	\$612,000	\$634,000
Construction	\$78,000	\$0	\$3,951,945	\$4,029,945
Total	\$100,000	\$0	\$4,632,445	\$4,732,445

The project budget is complete and appears to be accurate. Line items have been included for all foreseeable budget items including bond cost, legal fees, and interim interest. The proposed debt load will result in rates that are affordable. However, the applicant is relying on grant funding from five different sources. If one or more of these grants are not awarded, the project is probably not viable because of the high user rates that would be required to service the debt load. The applicant states that if all of the grant funding is not awarded, they may not proceed with the project, may re-apply on subsequent funding cycles, or may reduce the scope of the project doing more and smaller phases.

The O&M costs for the proposed project are reasonable, and the cost estimates for construction appear to be accurate. The alternatives that were selected will result in reasonable annual O&M costs. The annual reserve budget for the new wastewater system is only \$2,000. This amount may not be sufficient given the

significant amount of mechanical equipment that has to be maintained and eventually replaced, including the aeration system, irrigation system, disinfection system, lift stations, and back-up generator.

Benefit Assessment

The treated wastewater will be beneficially re-used instead of discharged to the environment. The timber and associated plants on the irrigation plot will take up the nutrients (nitrogen and phosphorous) in the wastewater. Timber growth and harvest on the tract will be enhanced by the irrigated wastewater. The water quality impacts currently being caused by the district's existing on-site wastewater treatment systems will be eliminated in the project area, and the associated risk to human health will be reduced. The water quality of the area's surface and groundwater of Seeley Lake should improve because of this project. The recreational benefits associated with the lake will be enhanced with improved water quality. This project will also help the nutrient reduction goals of the Clark Fork River drainage.

This project will require the direct creation of at least two or three jobs for the operation, maintenance, and administration of the new wastewater treatment and collection system. Future development in the district is impaired due to the problems associated with the on-site wastewater treatment systems. The creation of a new wastewater treatment system and central treatment plant will allow development to occur. With the new system in place, small residential lots less than 0.5 acre in size can be developed. It will also allow new commercial development and allow existing commercial interests to expand. A significant number of new jobs should be the indirect result of this project as new development occurs. Public support for the project has been documented in the application in the form of letters of support from local residents and businesses.

Environmental Evaluation

The collection system will be constructed in existing roadways and right-of-ways, so environmental impacts should be limited to the temporary impacts associated with construction, such as noise and dust. Construction of the wastewater treatment and disposal system will also result in temporary impacts from construction. Odor from the lagoons has been listed as a long-term impact that will occur during certain times of the year. The lagoons will be aerated to minimize this impact. There will also be some adverse visual impact associated with the lagoons and spray irrigation system. The visual impact will be minimized due to the location of the lagoons and irrigation system. Approximately 200 acres of state-owned land that is currently available for recreation will no longer be able to be utilized by the public. However, given the large amount of public land in the area, this impact is minimal. Overall, the project will benefit the environment by reducing or eliminating the pollution of the groundwater and Seeley Lake from the district's existing on-site wastewater treatment systems. An environmental checklist was completed and appears to be adequate.

The preferred lagoon and irrigation site is just east of an existing airport. The Federal Aviation Administration (FAA) has recommended that a wildlife assessment be performed to determine the extent of potential impact of the wastewater system on the airport and is concerned that the lagoons will attract waterfowl and other wildlife that pose a safety hazard to aircraft. Locating the lagoon next to the airport may also present a liability problem to the district should any collisions between aircraft and waterfowl occur. The airport may not be eligible for future funding from the FAA and the State Aeronautical Administration if the lagoons are located adjacent to the airport. Current standards require a 5,000-foot separation between the airport runways and the lagoons. The schematic designs in the PER show the lagoons within 2,500 feet on the airport runway. If the preferred site is deemed unsuitable, the alternate site will have to be used, which could increase project costs. The alternate site requires a river crossing and may require more transmission piping.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 14

Applicant Name	Upper and Lower River Road Water and Sewer District
Project Name	Water and Wastewater Utilities
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 657,700 Drinking Water State Revolving Fund (DWSRF) and Pollution Control State Revolving Fund (PCSRF) Loans \$ 332,000 Great Falls, City of Community Development Block Grant (CDBG) Entitlement Fund \$ 500,000 Treasure State Endowment Program (TSEP) Grant <u>\$ 1,318,000</u> U.S. EPA State and Tribal Assistance Grant (STAG)
Total Project Cost	\$ 2,907,700
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

There are now eight different subdivisions and five mobile home parks in the district with on-site water and wastewater systems. DEQ and the Great Falls City County Health Department (CCHD) authored a groundwater study in the area in 1997-98, finding high levels of nitrate and ammonia in drinking water wells. There is a long history of water quality problems in the small public systems.

Drinking water from area wells requires treatment for aesthetic qualities prior to drinking. There have been numerous drinking water quality complaints from small public system users, and several boil orders issued over the years. On-site wastewater systems are degrading area wells and groundwater quality. DEQ and CCHD now require this situation to be corrected as soon as possible.

In response to problems, a task force was formed, a facilities plan developed, a water/sewer district was formed, and the preliminary engineering report was finalized. The best solution is to install 25,700 feet of 8-inch PVC sewer lines, 23,200 feet of 8-inch PVC water mains, 442 water meters, and to connect to pre-existing City of Great Falls water transmission and sewer trunk lines that already exist within the district boundary.

TSEP, DNRC, STAG, and CDGB grants were applied for in 2002 and 2003, and grants were awarded. The newly formed board of directors elected to try to build wastewater facilities for all residents of the district in a Phase One project, with water main construction coming for all residents in a phase two project scheduled for 2007 after another round of the legislative grant cycle. The bond election was held in November 2003, and included provisions for \$3.3 million in Phase 1 wastewater loans and \$4.0 million in Phase 2 water loans. The voters defeated this bond issue.

The district board of directors has since accepted the recommendation of the engineer, which is to divide the district into smaller service areas, and to construct both water and sewer in each of these service areas as phased projects.

Technical Assessment

Project Background

The Upper and Lower River Road Water and Sewer District is located on the south side of Great Falls and just east of the Missouri River. The district was formed in 2001 to address problems with small public on-site wastewater treatment systems and individual on-site wastewater treatment systems. A 1998 groundwater study of the area revealed that the on-site wastewater systems were significantly impacting groundwater quality. Increased nitrate levels were found in wells used by residents of the district. DEQ issued a notice of violation to one of the public systems located in the Pearson Addition of the district. The PER also identifies other water quality issues with the wells in the district. Well water contains high levels of sulfate, hardness, and total dissolved solids (TDS). These constituents do not violate any primary drinking water standards, but elevated sulfate levels can produce a laxative effect in humans. The high TDS content makes the water taste bad. Many residents of the district haul drinking water or use bottled water. The proposed project involves

the construction of a new gravity sewer collection system and a new water distribution system. Both systems will be connected to the City of Great Falls water and wastewater systems. The proposed project will eliminate the contamination of the area's groundwater by on-site septic systems and will provide a reliable source of good quality treated drinking water from the City of Great Falls water system. Once the improvements are made, the district will be annexed into the city. The current project is the second phase of a three-phase project. Each phase consists of the construction of a water distribution system and a sewer collection system in one of three "service areas" of the district. The project was phased to allow grant-funding applications to be submitted during a subsequent funding cycle for each phase. This project approach will make the overall project more affordable to district residents. It also allows both water and sewer improvements to be made simultaneously for each phase, which meets city annexation requirements and avoids the cost of installing the two systems during different construction seasons.

Technical Approach

An adequate discussion of all feasible alternatives, including the "no-action" alternative, was provided. Alternatives evaluated included construction of a new water distribution system and wastewater collection system with connection to the City of Great Falls, and the construction of stand-alone water and wastewater systems. Detailed cost estimates were provided for each alternative. The basis for the cost estimates was not apparent, but the estimates appear to be accurate and reasonable. A present worth analysis was provided for each alternative, and a clear comparison of all alternatives was provided. The implementation schedule details project funding acquisition, design, and construction. Construction will be completed by November 2006, giving an overall project timeframe of two years. Test data showed that the groundwater resource has been affected by failing on-site wastewater treatment systems located within the district. Water quality analysis of wells located in the district documents the poor quality of the groundwater used for drinking by district residents. Design of the improvements will be in accordance with DEQ requirements.

Project Management

Adequate staffing has been provided to manage and administer the proposed project. The district board will oversee the entire project. The district secretary and a grant administrator will provide funding administration services. A professional engineer will provide design and construction administration. This project has had significant public involvement. Numerous public meetings and hearings have been held. Newspaper articles have been written about the project. There are a significant number of letters expressing support for the project from various agencies and governmental agencies, as well as from members of the district.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$291,100	\$291,100
Professional & Technical	\$50,000	\$0	\$310,000	\$360,000
Construction	\$50,000	\$0	\$2,206,600	\$2,256,600
Total	\$100,000	\$0	\$2,807,700	\$2,907,700

To keep user costs at an affordable level (\$63.58 per month per connection), over 75 percent of the project cost must be financed with grant funding. If this level of grant funding cannot be obtained, user costs could be as high as \$144 per month, which may not be acceptable to residents of the district. The proposed funding strategy is feasible. However, because applications for grant funding are very competitive, there is a high probability that the applicant may not be completely successful. The application states that the scope of the project will be cut back if all of the grant funding is not awarded. It should be noted, however, that Phase I of the project was awarded a funding package similar to that being proposed for Phase II.

Benefit Assessment

The project will eliminate the groundwater contamination that is being caused by the individual septic systems within service area of the project. Groundwater quality will be improved. It will also reduce the contaminant load on the Missouri River, improving aquatic habitat and water quality. Water meters will be installed, promoting conservation of water. Management of the water resource will be significantly improved by

connecting to the City of Great Falls water system. There has been significant public and agency support documented for the project. The application contains many letters of support from residents of the district as well as from Cascade County and the City of Great Falls.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly evaluated, and no apparent adverse long-term impacts will result. Short-term, construction-related impacts will be controlled through permitting and proper specifications. Overall, the environmental impacts associated with this project will be beneficial. Both surface and groundwater quality will improve with the implementation of the project.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 15

Applicant Name	Buffalo Rapids Irrigation District		
Project Name	Improving Irrigation Efficiency and Management through Canal Automation		
Amount Requested	\$ 88,955	Grant	
Other Funding Sources	\$ 12,872	Applicant	
	<u>\$ 11,403</u>	U.S. Bureau of Reclamation (USBR)	
Total Project Costs	\$ 113,230		
Amount Recommended	\$ 88,955	Grant	

Project Abstract (Prepared and submitted by applicant)

The proposal area covers 10,593 of the 45,647 acres contained within the Buffalo Rapids Project, located on 64 miles of the Yellowstone River in eastern Montana.

Buffalo Rapids has two primary concerns: water quantity and water quality. Secondary concerns are soil erosion, noxious weeds, and CO₂ emissions. Current conditions on the project are a 30 percent overall irrigation water use efficiency; nitrate fraction in excess of 7 percent in the lower Yellowstone River near Glendive attributed to Buffalo Rapids; an estimated 10 tons of soil loss per acre from furrow erosion; and 2,100 acres of noxious weed infestation.

Goals and objectives

- Increase system efficiency by 20 percent
- Reduce nitrate loading by 50 percent
- Reduce soil erosion to sustainable levels
- Reduce noxious weed infestations by 75 percent
- Reduce CO₂ emissions by 5,000 tons per year

The means to achieve the goals and objectives will be the most efficient and cost-effective method of addressing the problem developed through the NRCS Resource Management System planning process. Construction is being done by Buffalo Rapids, which has the means and experience, with technical assistance from NRCS and USBR. Since the first contracts were funded in October 1998, the district has installed over 150,000 feet of pipe, 2 AgriMet weather stations, a mile of canal liner, 4 center pivots, 51 surge valves, and over 100,000 feet of gated pipe.

The focus of this project involves the upgrade of the Buffalo Rapids District II canal systems through canal automation. The total cost of the project will be \$113,230, with the district donating \$9,842 in labor, machine

time, and machine shop time; and USBR contributing \$11,403 in engineering. The efficiencies cannot be attained without addressing the canal system.

Technical Assessment

Project Background

The Buffalo Rapids Project was constructed by USBR between 1937 and 1950. USBR owns the project and the irrigators operate and maintain the project. The project is comprised of two districts. Buffalo Rapids District II wasteway canals are the focus of this application. Excessive water is spilled from the system at the wasteways because no facilities are currently in place to monitor when water is being spilled and how much. District II includes 10,593 irrigated acres and uses the Yellowstone River as a water source.

Technical Approach

The goals of this project are to improve irrigation efficiency, reduce return flows and thus nitrates and sedimentation to the Yellowstone River, and reduce the amount of water diverted from the river. This project is part of an overall effort to improve system efficiencies.

The objective of the project is the installation of water level monitoring and wasteway gate automation equipment and facilities on District II wasteway canals.

When water begins to be spilled at the wasteways, the water level monitors will alert the main office via telemetry. The main office staff can then reduce diversions of water from the river to the system while at the same time close the wasteway gates to stop spilling water via remote controls. The result will be more efficient use of water with less water diverted from the river.

The application considered numerous alternatives. The alternatives selected are the most economically and technically feasible. The project's construction work will be completed primarily by the Buffalo Rapids Project staff. A contractor will be used for electrical work. USBR engineering staff will assist with the engineering. The project schedule is documented with project completion expected by 2005.

Project Management

The project manager will manage the construction and carry out administration of the project. The manager will coordinate with USBR for engineering.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$3,030	\$3,030
Professional & Technical	\$8,100	\$0	\$11,403	\$19,503
Construction	\$80,855	\$0	\$9,842	\$90,697
Total	\$88,955	\$0	\$24,275	\$113,230

The budget appears to be sufficient to fund the project. Material, labor, and equipment costs used to develop the budget appear reasonable and adequate. The costs of the alternatives presented were developed in a consistent manner. The selected alternative appears to be the most cost effective.

The proposed funding package is a reasonable mix of state and local funds. Local funds will be in the form of in-kind work/services.

The application indicates a total of 10,593 acres will be affected by the project. No indication of increased assessment fees is given in the application.

Benefit Assessment

Long-term renewable resource benefits include management of water resources through improved canal operation and better monitoring to allow reduction of wastewater for more efficient water use. This will result in a reduction in water diverted from the river. Resource conservation, protection, and development benefits will also be realized as a result of the improved operation. Quantification of water use will be assisted by use of the monitoring system installation.

Environmental Evaluation

No known long-term environmental impacts should occur from this project. Detailed information regarding wetlands, threatened and endangered species, soils and water quality must be addressed in the final design report. The project sponsor must obtain all necessary permits.

Funding Recommendation

DNRC recommends grant funding of \$88,955 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 16

Applicant Name	Choteau, City of		
Project Name	Water System Improvements		
Amount Requested	\$	100,000	Grant
Other Funding Sources	\$	500,000	Community Development Block Grant (CDBG)
	\$	500,000	Treasure State Endowment Program (TSEP) Grant
	\$	500,000	USDA Rural Development (RD) Grant
	\$	<u>800,000</u>	USDA RD Loan
Total Project Cost	\$	2,400,000	
Amount Recommended	\$	100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The city's water supply is obtained from two springs and two shallow wells at the north end of town. The source of this water is the unconfined Teton River aquifer. The developed water supply, which is sufficient to meet current and future demand, is of high quality and receives no treatment besides chlorination. The water is pumped into the distribution network at a single point, the water works well and pump house, and storage consists of two interconnected storage tanks located on the east valley rim. The water system currently serves 651 residential metered connections and 71 commercial metered connections.

Water is obtained from a shallow depth (less than 20 feet) at each source. The unconfined, highly permeable nature of the Teton aquifer makes these sources inherently vulnerable to surface or upgradient contamination. Each site has relatively unrestricted access for humans or animals. Three sites are adjacent to roadways. All four water sources combine in the water works well and pump house wet well before distribution. Therefore, contamination of any one water source would result in nearly instantaneous comingling and contamination of the entire water supply.

It has been determined that the storage tanks are also vulnerable due to relatively unrestricted access.

Also the wood-chinked boards at the bottom of the wet well are dislodging, allowing the well to fill with gravel and other alluvial materials. This presents a potential hazard of collapse of the entire wet well sump. The only way to repair the wet well is to take it out of service, which cannot be done until the city has established an alternative water supply source by constructing a new pump house.

The distribution system experiences excessive water loss. Of every 10 gallons of water pumped into the

distribution system, 5.4 gallons are lost due to leakage. This leakage represents a waste of water resources and energy and results in high O&M costs each year. Most of the leaks are in the central core of the city's water distribution pipe network, which was constructed in 1913.

The proposed solution is to 1) make the Richem lateral collector and pump house the largest water supply source with a new stand-alone, primary water pump station, and 2) replace the old leaking distribution lines. This will reduce the vulnerability and increase the reliability of the water supply. The city should construct a new pump house at Richem, equipped with chlorination and a standby generator, to serve as an independent water supply system. This will give the city two alternative water supply sources. This new pump house will result in overall cost savings from an energy and maintenance perspective and will allow for repairs to the water works wet well and pump house, which require substantial renovation.

Replacing approximately 14,000 linear feet of old distribution piping would eliminate leaks, reduce operating costs, and enable the city to conserve water.

Technical Assessment

Project Background:

Incorporated in 1913, the City of Choteau is the county seat of Teton County in west-central Montana. The population of Choteau is approximately 1,800. The municipal water system serves 543 residential customers and 115 commercial customers, including two schools, a hospital, post office, nursing home, senior citizens' center, and the Teton County Courthouse.

The original municipal water system was constructed soon after the city's incorporation in 1913 and consisted of the still-existing waterworks well and pumphouse, a cast-iron/lead-sealed joint distribution system, and a 250,000-gallon storage reservoir. Improvements have included the development of three additional groundwater sources, an additional 500,000-gallon storage reservoir, a chlorination system, and water meters for residential and commercial water users.

The four sources of water all flow into the wet well at the original pumphouse; contamination of any of the four sources would therefore contaminate the entire system. The original well and pumphouse are in need of rehabilitation. The existing distribution system loses 54 percent of its flow to leakage, and is slated for replacement. Additionally, the project proposes to construct a new pumping facility at the Richem lateral collector so water can be pumped directly into the distribution system. This will provide supply system redundancy and will reduce the potential for total system contamination. Minor mechanical and structural upgrades are being proposed for the two existing storage reservoirs.

Technical Approach:

The project goal is to provide the community with an upgraded and efficient drinking water system that will ensure service for a 20-year period or longer. The main components of the project include:

1. Renovation of the waterworks well and pumphouse;
2. Construction of a new pumping facility at the Richem lateral collector;
3. Total replacement of the existing distribution system;
4. Minor upgrades to the existing storage reservoirs; and
5. Instrumentation and control system upgrades.

Several alternatives including "no action" were considered for each of the project components. Preferred alternatives were selected based upon initial cost, performance, and present worth analyses.

The existing waterworks well and pumphouse are to be renovated. This will allow the municipal water system to remain in operation during the course of the project. Upon completion of the project, the waterworks well and pumphouse will be one of two similar facilities that will supply water directly to the city's new distribution system.

A new pumping facility will be constructed at the Richem lateral collector. This facility will pump directly to the new distribution facility, thus providing backup in the case of contamination or pump failure at the waterworks facility.

The existing distribution system was constructed prior to 1920, and monitoring has revealed the system loses 5.4 gallons of water for every 10 gallons pumped into it. The system has served well beyond its useful life, and will be replaced as part of this project.

Other project components include relatively minor upgrades to the two existing storage reservoirs as well as upgrades to the instrumentation and control systems used to monitor and operate Choteau's water supply.

Project Management

City staff will take the lead in project management, and based upon previous water and wastewater projects completed by the City of Choteau, they are well-qualified for the task. The project budget allows for funding to support the city in the financial and administrative aspects of the project. Construction management will be performed by the consulting engineer who maintains a permanent office in Choteau and will be on-site daily and during irregular hours as necessary. Both the engineer and the City of Choteau have kept the public informed during the development of the project and will continue to do so during the design and construction phases.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$20,000	\$20,000
Professional & Technical	\$50,000	\$0	\$170,000	\$220,000
Construction	\$50,000	\$0	\$2,130,000	\$2,180,000
Total	\$100,000	\$0	\$2,320,000	\$2,420,000

The budget strategy provided in the application is reasonable. The applicant is a local government and has the ability to collect charges for debt and operation. Current residential charges for water service are \$24.30 per month; the projected residential rate is \$34.33 per month, and will affect 543 households. This will result in a residential utility bill (water and sewer) of \$52.95, which exceeds the target rate by \$3.68.

Cost estimates were provided for the options considered for each of the project components and were used to help determine preferred alternatives. Engineering costs are within the typical range for a project of this magnitude.

The city is currently applying for a TSEP grant, a CDBG grant, and an RD grant-loan combination. The application includes a Capital Improvements Plan, and construction can proceed for stand-alone improvements on a prioritized basis if not all of the applications are successful.

Benefit Assessment

The proposed project provides multiple renewable resource benefits. It will reduce pumping costs and reduce water treatment needs. Because the current system is vulnerable to contamination due to layout and design, this project will provide health benefits to the community. The project will provide supply backup and redundancy, necessary for the city to manage and operate its system without service interruptions. Letters submitted with the grant application substantiate public involvement and support for the project.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly evaluated and no apparent adverse long-term impacts will result. The beneficial results are primarily related to public health issues. Included are the development of a backup water supply source and the reduction in potential for system contamination. The project will result in electricity savings as well as water use efficiencies, an important consideration for a system utilizing shallow groundwater as its drinking water system supply source.

Short-term construction impacts will be controlled through permitting and proper construction methodology including traffic control.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 17

Applicant Name	Dodson, Town of	
Project Name	Wastewater System Improvements	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 443,150	Community Development Block Grant (CDBG)
	\$ 88,212	Pollution Control State Revolving Fund (PCSRF) Loan
	\$ 427,500	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	\$ 1,058,862	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Town of Dodson is currently served by a central collection and treatment system. The original gravity collection system, constructed in 1958, consists of approximately 11,000 feet of gravity collection mains. The original system consists of 8-inch diameter pipes with the trunk lines being cast iron pipe and the laterals being clay tile pipe. Overall, the collection system is in relatively good shape because the cast iron pipe had an interior coating and has held up very well over the years. The town has historically had very few plugging events during the life of the facility. The collection system discharges to a lift station located just south of town on the east side of Montana Highway 204. The lift station pumps wastewater to the facultative lagoon via a 2,900-foot, 6-inch diameter cement asbestos force main; the treatment system consists of a single-cell facultative lagoon system with no disinfection and a direct discharge of treated effluent to Dodson Creek, which flows into the Milk River, approximately 1 mile south of the discharge point.

The existing single-cell lagoon does not meet DEQ requirements for a minimum of three treatment cells. The inlet pipe to the lagoon is located near the discharge location and has a high potential for "short circuiting" the lagoon. The single cell does not offer any operational flexibility for controlling odors, improving treatment, or bypassing a cell for repairs or sludge removal. The lagoon has a substantial build up of solids in the existing lagoon. The existing treatment pond detention time for current flows is 120 days, which is well under the DEQ standard of 180 days, resulting in insufficient treatment prior to discharge. The town has had over a dozen biological oxygen demand and total suspension solids violations of its permit since 1994. The town has been given a new discharge permit, which includes a compliance schedule, most notably a reduced fecal coliform limit and additional testing requirements. The town's current treatment system will not meet the proposed fecal coliform or ammonia limits for the upcoming permit, which will be issued in 2006, when DEQ will likely implement the more stringent fecal coliform and ammonia limits.

The existing lift station is substandard and in poor condition. The facility does not have an alarm or backup power for the pumps, the control and electrical/mechanical systems are outdated, and access to the dry well is a major safety hazard.

The proposed improvement project includes installation of a new lift station and replacement of the existing lagoon with a two-cell retention wastewater treatment system. The estimated cost is \$758,000.

Technical Assessment:

Project Background

The Town of Dodson is currently served by a centralized wastewater collection, treatment, and disposal system. The original collection system was constructed in 1958 and includes approximately 11,000 lineal feet of 8-inch conventional gravity collection pipe, a central lift station, a 2,900 lineal foot forcemain to the town's single-cell facultative treatment lagoon. Discharge is to Dodson Creek, which flows to the Milk River approximately 1 mile south of the lagoon system.

The purpose of the project is to bring the central lift station and treatment facility to current-day design standards, enhance performance and safety, and provide a facility that can meet limitations expressed in the town's current and anticipated Montana Pollutant Discharge Elimination System (MPDES) permit. The applicant has had numerous violations of its MPDES permit over the past 10 years, and has been advised that the reissued permit (due in 2006) will contain relatively stringent fecal coliform and ammonia limitations. The current facility cannot meet these anticipated limitations.

Technical Approach

The project goal is to provide the community with an upgraded wastewater system that will ensure service for a 20-year period or longer. The main components of the project include:

1. Installation of a new central lift station; and
2. Replacement of the existing lagoon with a two-cell total retention lagoon facility

Several alternatives, including "no action," were considered for each of the project components. The applicant evaluated discharging systems, land application, and total retention. Preferred alternatives were selected based upon initial cost, performance, and present worth analyses.

The applicant provided a thorough evaluation of all feasible alternatives including detailed sizing calculations, performance guidelines, and consideration of local environmental conditions. The recommended alternative is very well supported, despite its higher initial capital cost compared to the other alternatives. The estimated costs for construction and long-term O&M are detailed and reasonable. All anticipated project components have been accounted for in the cost estimates and project budget. There are no significant weaknesses in the alternative evaluation or recommended alternative justification.

Project Management

Project management will be a coordinated effort between the town mayor, town council, project manager (contract), project engineer (contract), legal counsel (contract), and the town clerk/treasurer. Specific duties for each of the management team are fully described in the application and no required function has been overlooked. The town is prepared to go through procurement for acquiring the services of a project manager. All required protocols for obtaining and managing public funding sources have been accounted for by the applicant.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$44,862	\$44,862
Professional & Technical	\$25,000	\$0	\$129,700	\$154,700
Construction	\$75,000	\$0	\$784,300	\$859,300
Total	\$100,000	\$0	\$958,862	\$1,058,862

The budget strategy provided in the application is reasonable. The applicant is a local government and has the ability to collect charges for debt and operation. The town has documented an adequate low-to-moderate income percentage to qualify for CDBG funds. Current residential charges for sewer service are \$10.00 per month; the projected residential rate is \$18.10 per month, and will affect 57 residential households. This will result in a residential combined bill (water and sewer) of \$43.10, which exceeds the target rate of \$33.57 by 28 percent.

Cost estimates were provided for the alternatives considered for each of the project components, and were used to help determine preferred alternatives. Engineering costs and grant administration costs are reasonable within the typical range for a project of this magnitude.

The city is currently applying for TSEP and CDBG grants, and a PCSRF loan. Dodson appears to be a viable candidate for all these programs and is on the state's priority list for wastewater system needs.

Benefit Assessment

The proposed project provides renewable resource benefits in the form of reduced discharges of poorly treated wastewater to groundwater and surface waters. With a total retention system, this will eliminate the town's point-source discharge of pollutants to any state waters.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly evaluated and no apparent adverse long-term impacts will result. The beneficial results are primarily related to environmental and public health issues. The project could result in electricity savings through implementation of a more efficient raw wastewater-pumping unit. The lagoon system will include a soil-covered, membrane-lined lagoon, allowing some enhanced habitat opportunities.

Short-term construction related impacts would be controlled through permitting and proper construction methodology including traffic control.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 18

Applicant Name	Gallatin County
Project Name	Gallatin County Floodplain Delineation Project
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 49,000 Applicant
	\$ 640,000 Federal Emergency Management Agency (FEMA)
	<u>\$ 11,000</u> Montana DNRC - Water Resources Division (in-kind)
Total Project Cost	\$ 800,000
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The population of Gallatin County has been exploding for the past 25 years. Housing is needed close to Bozeman and Belgrade. An ideal area for housing lies between Bozeman and Belgrade, but some of this area is subject to flooding. Determining which areas are subject to flooding and which are not is an unusually complex hydrologic and hydraulic issue. The watercourses are close together, and flooding in one may spill over into adjacent drainages. Thus, the determination of a flood hazard area in one basin must consider the situation in nearby drainages as well. The Gallatin County Floodplain Delineation Project will address this difficulty by delineating floodplain areas in all of these drainages at once. The result will be protection of the floodplains, substantial cost savings for developers and Gallatin County, DNRC's floodplain program, and logical development of the project area.

Gallatin County is the fastest growing county in Montana, according to U.S. Census figures since 2000. The project area is not heavily developed at this time, but it is a prime area for development due to its proximity to

Bozeman and Belgrade. One of the primary limits to development of the area is the lack of knowledge about the extent of the flood hazard areas. Because of this limit, lots much farther from town are being developed instead.

FEMA recently initiated a program to modernize the nation's floodplain maps. DNRC has identified Gallatin County as the highest priority county for floodplain maps. The FEMA program requires a 20 percent cost share from state and local sources. RRGL funding would provide part of the necessary cost share for the FEMA program. Gallatin County, the DNRC floodplain program, and others would provide the rest. The total cost of the project is estimated to be \$800,000, with \$640,000 coming from FEMA and \$160,000 from state and local sources.

Technical Assessment

Project Background

As Gallatin Valley grows, residential development spreads onto open space between Bozeman and Belgrade. The same area is crossed by several creeks, and flooding poses a potential risk to further development. Floodplain boundaries will be delineated in the area between Bozeman and Belgrade south of U.S. Interstate 90 to Huffine Lane. Drainages included in the study would be Hyalite Creek, McDonald Creek, Aajker Creek, Baxter Creek, and Dry Creek. Approximately 85 miles of stream will be mapped. The project covers approximately 14,000 acres. Currently no FEMA maps exist for the project area. There are a few floodplain delineations for individual developments, but their accuracy is in doubt. FEMA has published floodplain maps for the East and West Gallatin rivers; these maps are just outside the proposed project area. DNRC has investigated and found a large, comprehensive project is needed to adequately address hydrologic and hydraulic complexities.

Technical Approach

The project goals are to preserve and maintain the resource value of the west Gallatin Valley floodplain within Gallatin County, and to reduce private property damage associated with flooding by mapping flood hazard areas and quantifying base flood elevations within the project reach.

Comprehensive floodplain delineation and assessment are planned. This will be accomplished by:

1. Selecting a qualified engineer contractor;
2. Completing an initial coordination and information search;
3. Conducting initial field reconnaissance;
4. Completing a detailed hydrologic analysis;
5. Completing a flood flow frequency analysis to determine the flood discharges for 10-, 50-, 100-, and 500-year floods;
6. Conducting a hydraulic analysis; and
7. Obtaining survey data on stream profile and cross sections.

To keep the public informed about the floodplain study and mapping:

- Public meetings will be held;
- Brochures circulated;
- Newspaper articles published;
- Landowners contacted via mail;
- Public notices published; and a
- Contact phone number will be made available.

Once draft maps are printed, the public will have a chance to review and comment on these maps. As part of the floodplain management program, Gallatin County must develop and adopt appropriate floodplain zoning and guidelines once the floodplain study is adopted.

Project Management

The project management team will include the Gallatin Valley Planning Department, DNRC Floodplain Section, FEMA Region 8 office, and consultants. Gallatin County has recently completed floodplain delineations. Gallatin County currently relies on contracting consultants to manage the bulk of the county floodplain program; these consultants will be assigned many of the project management duties. Each entity involved will use existing staff and contractors to manage the project. The partnerships involved in this project are appropriate and experienced enough to see this project to completion. DNRC and FEMA have helped many Montana communities to prepare and adopt flood hazard maps. The amount of time allocated for personnel to carry out the project seems reasonable.

Public input is of particular importance during floodplain delineations. The DNRC floodplain program has developed a floodplain delineation process that is very effective in obtaining public input and providing public information. Gallatin County has recently followed this process and been successful in approving new floodplain delineations. At least three public meetings are held, landowners are notified by mail, and a formal contested case hearing is conducted before the commissioners adopt the study.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$48,100	\$48,100
Professional & Technical	\$100,000	\$0	\$651,900	\$751,900
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$700,000	\$800,000

The applicant estimates that 3,952 people will be served by the project, including 1,367 households and 23 farms and ranches. The \$100,000 requested grant funds would be spent on contracted services. This includes a portion of the costs for field surveys, hydrologic-hydraulic analyses and calculations, preparing maps, floodplain characterization, preparing the floodplain report, gathering public comments, and floodplain delineation adjustments based on public input. All costs are based on recent studies in Gallatin County and on previous floodplain study and mapping projects conducted in Montana. The costs are based on the price per river-mile of the above contracted services. The total cost is \$8,610 per mile for approximately 85 miles of watercourses. These costs seem to be reasonable. The cost of flood mapping in Montana ranges from \$6,050 to \$12,200 per river mile. Actual cost is dependent on map scale, and the amount of physical data needed, such as number of surveyed cross sections, reach length, and degree of hydrologic and hydraulic analysis involved. Matching costs appear to be secure. Costs of three project alternatives are discussed and the least-cost alternative was chosen. The chosen alternative takes advantage of the FEMA 80 percent cost share under FEMA's new map modernization initiative.

Benefit Assessment

This project primarily improves and promotes the beneficial management of the Gallatin County floodplain. The project will provide sound new information on 85 miles of streams to guide future development. Any new structures or obstructions going into the 100-year floodplain must be outside the high-hazard area of the floodplain and elevated for protection from a 100-year flood. Septic systems must be sited 100 feet from the 100-year floodplain boundary. When properly managed, conserved, and protected, the floodplain is an important resource, allowing floodwater to pass during a flood event.

Environmental Evaluation

There are no adverse environmental impacts associated with this project.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 19

Applicant Name Yellowstone Irrigation District
Project Name Yellowstone Irrigation District Flow Measurement

Amount Requested	\$ 99,999	Grant
Other Funding Sources	\$ 0	
Total Project Cost	\$ 99,999	

Amount Recommended \$ 99,999 Grant

Project Abstract (Prepared and submitted by applicant)

The Yellowstone Irrigation District (YID) is located near the town of Hysham, MT, west of Forsyth. YID is requesting funds for the design and construction of flow measurement devices along the irrigation canal. The goal of the project is to provide YID with a tool that will assist in developing better management practices to conserve resources and increase crop yields. This project was conceptualized by YID as the first step in long-range planning and modernization efforts, and was initiated through a Renewable Resource Planning Grant.

An engineering study was undertaken to evaluate the infrastructure and operational controls of YID. The primary recommendation of the study is to install flow-measuring devices throughout the canal so YID can measure the water diverted from the Yellowstone River and begin to assess canal and operational efficiencies. Currently, during the peak irrigation season, there is not enough water in the lower reaches of the canal to satisfy the crop water consumption requirements. A direct consequence of the water shortage is an approximately 10 percent reduction in crop yields over 1,115 acres, as well as an additional 50 acres that cannot be used for crop production. The result: an estimated annual revenue loss to the community of approximately \$100,000.

Implementation of the proposed project will potentially result in a significant economic benefit to the community. Improved knowledge of the canal flow and irrigation delivery will allow YID to get more water to the lower reaches of the canal during the most critical time of the year. If improved management can reduce the annual revenue losses by 50 percent, the additional \$50,000 in revenue will potentially generate an additional \$175,000 to \$350,000 in economic activity.

Technical Assessment

Project Background

YID is located near the town of Hysham. The canal begins 5 miles west of Hysham where there is a submerged rock-fill diversion dam across the Yellowstone River. The canal headgates are located at the east end of the diversion dam; from there, the canal flows eastward by gravity for approximately 29 miles. The canal serves approximately 11,730 acres with an estimated maximum capacity of 400 cfs.

The irrigation district is almost 100 years old and its infrastructure has begun to deteriorate. Long-range management and operational programs are needed to ensure the continued viability of the canal. Last fall, in an effort to develop a long-range plan, the district hired a consulting engineer to inventory and assess the main canal and infrastructure. This was completed with a Project Planning Grant from DNRC and the district's own matching funds. The primary recommendation of the study was to install flow-measuring devices along the canal to assess canal and operational efficiencies. The study also recommended a thorough evaluation of the existing diversion structure in the Yellowstone River.

Technical Approach

The goals of the project are to maximize the beneficial use of the district's water rights and to conserve water resources through installation of flow-measuring devices and improved management practices. The objective of the project is to install six Replogle flumes. The flumes will provide measured flow data through the canal.

The data will provide the district with a tool to evaluate canal efficiency and irrigation delivery. Also, comparing total diversion to the irrigation demand will allow the district to better manage the diversion structure, potentially drawing less water from the river as the irrigation demand decreases.

The applicant presented the following alternative solutions: 1) "no-action", 2) weir measuring devices, and 3) the preferred alternative of using a Replogle flume for a measurement tool. The Parshall flume was also evaluated, but the Replogle flume was determined to be less expensive and easier to adapt to existing channel geometry. Flumes are typically more efficient than weirs.

Project Management

YID will contract with an engineering firm to not only oversee the construction of the project, but also to do the grant administration work, including disbursement of funds and reporting. The district will assist where it can, but does not have adequate staff to administer the contract.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$2,880	\$0	\$0	\$2,880
Professional & Technical	\$19,170	\$0	\$0	\$19,170
Construction	\$77,949	\$0	\$0	\$77,949
Total	\$99,999	\$0	\$0	\$99,999

The applicant has presented a reasonable and sound budget for this project. Material, labor, and equipment costs were estimated based on a conceptual design and the Montana Department of Transportation's published average bid prices. A 20-year present worth analysis with an assumed inflation rate of 3 percent \$95,201. Aside from the "no-action" alternative, the Replogle flumes are the least-cost alternative.

The district currently assesses \$9.00/acre on 11,724 acres. The project will be financed solely from the grant funds.

Benefit Assessment

The primary resource benefits of the proposed project are water conservation and management. The measuring devices in the canal would provide better management by providing a tool for the district to ensure users of the system are not exceeding allowable water rights. The district will be better able to monitor the total diversion from the Yellowstone River and limit that diversion to only what is required to satisfy irrigation demand.

Environmental Evaluation

The only adverse environmental impacts to this project would be short-term and related to construction of the flumes.

Funding Recommendation

DNRC recommends grant funding of \$99,999 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 20

Applicant Name	Gardiner-Park County Water District
Project Name	Water System Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 16,700 Applicant
	\$ 953,100 Drinking Water State Revolving Fund (DWSRF) Loan
	\$ 500,000 Treasure State Endowment Program (TSEP) Grant
Total Project Cost	\$ 1,569,800
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Gardiner is an unincorporated community at the north entrance to Yellowstone Park. The Gardiner-Park County Water District was created in 1947. Since the original distribution system was laid in 1948, the district has continued to improve and develop the system.

Gardiner's water supply exceeds the new EPA maximum contaminant level (MCL) of 0.01mg/l or 10 parts per billion (ppb) for arsenic by two to three times. The water needs to be treated to bring it into compliance with this new EPA standard. The arsenic level is similar in both groundwater and area surface water. Arsenic is associated with very high skin, bladder, and lung cancer risks. Even though Gardiner is not required to meet the new MCL until 2006, the imminent health concerns of the people require treatment of the water in a timely manner. Additionally, the 150,000-gallon water storage tank located in the park does not maintain water during high-demand days, causing obvious lack of water when needed. Without the treatment system, 90 percent of the current water resource would be lost.

The highest priority for both protection of health and for meeting enforceable state and federal regulations for drinking water is to begin treating for arsenic as soon as possible. The best alternative for this problem is to provide a treatment system for groundwater using granular ferric hydroxide or granular ferric oxide media as outlined in Section 10, Option 6 of the Preliminary Engineering Report (PER) and reconfirmed through pilot testing. The low cost, no chemical requirements, and low operator requirements make it ideal for small communities. It is also very important that the district provide an additional 2,250 feet of 8-inch pipe outside the booster station, thereby doubling the capacity of the water system.

Technical Assessment

Project Background:

Gardiner is an unincorporated community located in Park County, at the north entrance to Yellowstone Park. The Gardiner-Park County Water District was created in 1947. It owns, operates, and maintains the public water system that serves Gardiner, some of the surrounding area, and limited development in Yellowstone National Park. Currently the National Park Service is building a multi-million dollar Heritage Center near its Gardiner entrance, which is to be served by the Gardiner-Park County Water District. Arsenic levels in water from the two public water supply wells in Gardiner range from 21 to 28 ppb, which are in excess of the new MCL of 10 ppb. Arsenic is a known carcinogen, and is associated with very high skin, bladder, and lung cancer risks. Without a treatment system, 90 percent of the current water resource would be lost. Additionally, a water storage tank located in the park does not maintain water during high demand days, which is a hydraulic concern that needs to be addressed.

Technical Approach

The primary goal of the project is to remove the arsenic in the public water system to below the new MCL of 10 ppb. A secondary goal is to allow the Yellowstone Park tank to remain full.

Eight treatment alternatives, including "no action," were considered to achieve the project goal. The alternatives were compared in a matrix that included cost, performance, expandability, environmental

impacts, and other considerations. The PER included a justification for the basis for selecting the preferred alternative. In addition, a one-year pilot study for two ferric media was conducted which further solidified the selection of the preferred arsenic treatment alternative.

Alternatives considered for keeping water in the Yellowstone Park tank are to, 1) providing a new groundwater source, 2) providing a surface water source, 3) providing an additional storage tank, and 4) increasing booster station capacity by adding 2,250 feet of pipe from the booster station. A 1993 water study in Gardiner considered the first two options and eliminated them due to poor water quality in the aquifer and high surface water treatment costs, respectively. The tank alternative was also eliminated because of its higher cost and the difficulty in obtaining permission to construct it in Yellowstone Park. The addition of the booster station pipeline was chosen and was recommended in a report written in 2000. DEQ is familiar with the Gardiner-Park County water system hydraulics, and feels that adding a line from the booster pumps is the next improvement necessary to correct the water system.

The proposed project consists of the two top-priority improvements identified in the: (1) a treatment system using granular ferric oxide media and (2) an additional 2,250 feet of 8-inch pipe outside the booster station parallel to an existing pipeline.

Project Management

The proposed project involves several agencies, and the district has hired a project administrator to manage the project from start to finish. The administrator will be responsible for keeping each funding agency informed of project progress. The project management plan outlines the duties for the project administrator, engineer, attorney, bond counsel, district clerk, and district board. This provides for a good staff of specialists to perform duties important to the project within their areas of expertise. The project administrator will issue press releases to keep the public informed of the project. The articles will provide information on project progress and will encourage the public to attend the monthly district board meetings.

The project management plan provides for thorough and well-organized contract management with regulatory and funding agencies, consultants, contractors, and other involved parties.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$121,200	\$121,200
Professional & Technical	\$0	\$0	\$221,000	\$221,000
Construction	\$100,000	\$0	\$1,127,600	\$1,227,600
Total	\$100,000	\$0	\$1,469,800	\$1,569,800

The project budget is complete and includes adequate detail to show that the proposed budget is sufficient to complete the proposed project. The applicant has already received a \$500,000 TSEP grant and has committed \$16,700 of district funds to the project. The applicant plans to obtain a \$953,100 DWSRF loan for the remainder of the project budget.

The applicant is a local government and has the ability to collect charges for debt and operation. Current residential charges for water service are \$30.42 per month; the projected residential rate is \$44.94 per month, and will affect 280 households. This will result in a residential utility bill (water and sewer) of \$59.00, which exceeds the target rate by \$7.03.

Cost estimates were provided for the options considered for each of the project components and were used to help determine preferred alternatives. Engineering costs are within the typical range for a project of this magnitude.

Benefit Assessment

The proposed improvements will allow the Gardiner-Park County Water District to better manage its water system. The new 2,250 feet of water main from the booster station will allow flow from the booster station to

double, thereby enabling the park water storage tank to remain full. This is critical to the operation of a new irrigation system just inside the park boundary. The proposed treatment system is necessary to manage 90 percent of the summertime water supply for the district. Without the treatment system, the district will not be able to comply with the Safe Drinking Water Act. Removal of arsenic in the public water supply is necessary to ensure the distribution of safe drinking water to the public and reduce the cancer risks associated with arsenic in the drinking water.

The new treatment system will keep in existence the renewable resource benefits that exist today. Without the new treatment system, Gardiner will lose 90 percent of its usable water resource in 2006. The Park Service has had serious problems with erosion of the topsoil in the flat area just inside the park. The sensitive grassland has been devastated by the drought (and possibly overgrazing by wildlife), and dust storms have blown the soils across the plains. In April 2002, the Park Service requested that the district provide water for an irrigation system to be used to bring that land back to its natural state. The irrigation system requires district water to get the native grasses to grow and eliminate the wind erosion and loss of topsoil in that sensitive ecosystem. Irrigation of this area will improve the wildlife habitat. Letters submitted with the grant application substantiate public involvement and support for the project.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly evaluated and no apparent adverse long-term impacts will result. Short-term construction-related impacts will be controlled through permitting and proper construction methodology including traffic control.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 21

Applicant Name	Liberty County CD	
Project Name	Chester Sprinkler Irrigation Project	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 15,500	Applicant (223 Grant, in-kind, and fees)
	\$ 33,400	Bear Paw Development Corporation (in-kind)
	\$ 50,000	Growth Through Agriculture Grant
	\$ 15,000	Irrigation Development Grant
	\$ 7,500	Local Business Contributions
	\$ 35,000	Montana Department of Agriculture
	\$ 11,000	Montana DNRC - Water Management Bureau (in-kind)
	<u>\$ 20,000</u>	US Bureau of Reclamation (USBR)
Total Project Cost	\$ 287,400	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The purpose of this application is to obtain funding to complete a Preliminary Engineering Design for the Chester Sprinkler Irrigation Project. Once this project is completed, the landowners will be able to decide if it is possible to develop a large-scale irrigation project.

This project is located in Liberty County, near the town of Chester. The project envisions the conversion of approximately 20,000 to 40,000 acres of privately owned dry land cropland to sprinkler irrigated cropland. The water for this project is available from Lake Elwell (Tiber Dam) through Water Service Contracts from USBR. Therefore, Pick-Sloan power should be available for this project. As envisioned, 35 to 40 landowners would be involved in this project. This project will put to beneficial use a portion of the water, 40,000 to

80,000 acre feet, that was set aside for agricultural purposes when the construction of Tiber Dam was authorized by the U.S. Congress.

There have been several efforts by private individuals to develop irrigation in the area. At the present time, five private irrigators and the Tiber Irrigation Company, which consists of 17 individuals, are pumping water from Lake Elwell under long-term Water Service Contracts. The maximum amount diverted is about 6,000 acre-feet per year. The total acreage irrigated in 1982 was about 3,000 acres. The majority of the area that has been developed is south and southwest of Tiber Dam, as well as along reaches of the Marias River below the dam.

Since 1956, numerous large-scale irrigation projects have been proposed to use the water resource from Lake Elwell, but none has been successful. In recent years, a number of issues have developed to bring the idea of irrigating this area back to the forefront. Some of these considerations are, 1) the farm economy in Liberty County, as well as the rest of the nation, is in decline; 2) the development of sprinkler irrigation will provide opportunities for the production of high value and value-added crops; 3) this area of north-central Montana has been experiencing severe drought conditions in recent years; and 4) other demands are being made on the unallocated water in Lake Elwell. Because of these considerations, the landowners in the area have decided to that it is necessary to more thoroughly evaluate the possibility of developing a large-scale irrigation project.

It is anticipated that this project will cost approximately \$1,000 per acre to develop. Therefore, the total cost of the project would be \$20 to \$40 million. The use of Pick-Sloan power would greatly enhance the economic feasibility of this project.

Technical Assessment

Project Background

Tiber Dam and Lake Elwell were constructed in 1956 as part of the Flood Control Act of 1944. The project is known as the Lower Marias Unit of the Pick-Sloan Missouri Basin Program. When Tiber Dam was authorized under the Flood Control Act of 1944, one of the goals was to provide for flood control and the other was to provide water for irrigation. Although the facility has an adequate supply of water to irrigate 127,000 acres, the irrigation features were not included because an irrigation district was not formed to negotiate the repayment contract with the United States.

There have been several efforts by private individuals to develop irrigation in the area. At the present time, five private irrigators and the Tiber Irrigation Company, which consists of 17 individuals, are pumping water from Lake Elwell under long-term water service contracts. The maximum amount diverted is about 6,000 acre-feet per year. The total acreage irrigated in 1982 was about 3,000 acres. The majority of the area that has been developed is south and south west of Tiber Dam, as well as along reaches of the Marias River below the dam.

Since 1956, there have been several large-scale irrigation projects proposed to use the water from Lake Elwell, but none of them has been successful. In recent years, a number of issues have developed to bring the idea of irrigating this area back to the forefront. Some of these considerations are: 1) the farm economy in Liberty County, as well as the rest of the nation, is in decline; 2) the development of sprinkler irrigation will provide opportunities for the production of high value and value-added crops; 3) this area of north-central Montana has been experiencing severe drought conditions in recent years; and 4) other demands are being made on the unallocated water in Lake Elwell.

Technical Approach

The goal of this project is to develop a currently under-utilized resource by developing the water in Lake Elwell. This goal will be accomplished by completing the preliminary engineering design to determine the cost of the development of the sprinkler irrigation of 20,000 to 40,000 acres of presently dry land farmland.

The objective to accomplish this goal is to complete a preliminary engineering report to determine the cost of the development of the sprinkler irrigation of 20,000 to 40,000 acres of presently dry land farmland. The project's tasks are:

- Determine the area that can feasibly be sprinkler irrigated.
- Develop a preliminary design and cost of the pump station located on Lake Elwell.
- Develop a preliminary design and cost for the water delivery system to the sprinkler irrigation system.
- Develop a preliminary design and cost for the auxiliary pumps and surface sprinkler equipment.
- Determine pumping costs based on various energy alternatives.
- Develop cost alternatives associated with the irrigation of various acreages.

The alternatives considered were 1) "no action" and 2) attempt to find alternative funding. The "no-action" alternative has been exercised for 48 years. Because of a dwindling farm economy, extended drought in the area, and additional demands being placed on the unallocated water resources stored in Lake Elwell, the "no-action" alternative may no longer be valid. The only other known funding sources yet untapped are the landowners themselves and they do not have the resources to fund a study of this magnitude.

Project Management

The project will be almost entirely managed by a combination of the Chester Irrigation Project Steering Committee and a contracted project coordinator. Liberty County CD will have a limited amount of involvement and will serve mainly in an administrative capacity.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$3,250	\$0	\$28,115	\$31,365
Professional & Technical	\$96,750	\$0	\$159,285	\$256,035
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$187,400	\$287,400

The budget strategy provided in the application is reasonable. The applicant is waiting for the results of the reconnaissance level feasibility study currently being completed so the results can be used in the other grants listed as match funding. The DNRC RRGL grant will be the primary funding for the study. If the applicant does not get this grant, the project will probably not move forward. If the other match funding is not obtained, the project will move forward, but at a modified level.

Engineering costs are within the typical range for a project of this magnitude.

Benefit Assessment

The proposed project will provide renewable resource benefits in conservation and development. If implemented, sprinkler irrigation will be used as opposed to flood irrigation. Water measurement will be part of the project. The consumptive rate of use will be monitored so there will be little to no run-off. This will prevent sediment from entering the river and will conserve on power from pumping. 20,000 to 40,000 acres of land that are currently dry-land farmed will be developed into irrigated land. The Preliminary Engineering Study will also evaluate the use of alternative power such as hydropower and wind power. The study will also evaluate off-stream storage as an option.

The proposed project will enhance wildlife watching and hunting by providing more vegetative habitat.

It is anticipated the new irrigation of 40,000 acres would create approximately 40 new jobs in the surrounding area.

Environmental Evaluation

This project is a preliminary engineering study (PER) and will have no adverse environmental impacts. If the project is constructed, the PER will have to address environmental impacts and permitting.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 22

Applicant Name	Cascade, Town of
Project Name	Water System Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 178,500 Applicant
	\$ 500,000 Community Development Block Grant (CDBG)
	\$ <u>505,000</u> Treasure State Endowment Program (TSEP) Grant
Total Project Cost	\$ 1,283,500
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Town of Cascade water system was constructed in 1913. Some of the original water system components are still in use today. Approximately 72 percent of the mains in the existing distribution system are 4-inch diameter or smaller. More than one third of the town's fire hydrants are 90 years old with only 2½-inch nozzles. The town's storage consists of two twin concrete reservoirs with a total storage volume of 204,000 gallons.

The town's water system currently has the following documented deficiencies:

- Over 50 percent of the water mains are 90 years old and has exceeded its useful life . The town has repaired over 200 water main leaks since 1990.
- Old, undersized water mains result in large pressure drops when fire hydrants are opened, which increases the potential for backflow and contamination of the public water supply.
- The large number of leaks increases the potential for backflow and contamination of the public water supply.
- A computer model of the system indicates negative pressures could be experienced in the system during high water demand periods, which increases the likelihood of contaminants being introduced into the system.
- Fire hydrants installed on mains smaller than 6-inch in diameter are in violation of DEQ standards.
- The old fire hydrants are incapable of providing adequate fire flows and are in violation of DEQ standards. Many of these hydrants are inoperable or leak excessively.
- Old and undersized water mains have been tested and shown to flow as much as ten times less than the recommended ISO fire flow requirements.
- Storage is inadequate for emergency demand and inadequate for fire protection.
- No auxiliary power is available to provide well operation and supply water in case of a power outage or failure.
- The distribution system is experiencing problems with the deposit of manganese on the interior of the pipes, resulting in a constriction of flow.

The proposed solutions are to replace old and undersized mains with new 6-, 8-, and 10-inch PVC mains, and replace all 19 of the old fire hydrants with new 6-inch hydrants. Proposed water storage improvements consist of construction of a new 273,000-gallon buried concrete storage reservoir adjacent to the town's

existing reservoirs, installation of new telemetry controls for the wells and water storage reservoirs, and purchasing one portable generator for emergency operation of the existing water wells.

Technical Assessment

Project Background

The Town of Cascade is located on Interstate 15, approximately 35 miles southeast of Great Falls. The Preliminary Engineering Report (PER) submitted with the application is an addendum to a PER that was completed in 1999. Because of the 1999 PER, in 2001 the town installed water service meters and drilled a new water supply well (Madison Well 2). The addendum addresses the water system deficiencies that were not addressed in the 2001 water system improvements project. These deficiencies include:

- lack of storage to meet fire flow and peak demands;
- loss of 35 percent of the town's water supply due to leakage from old and deteriorated water mains in the distribution system;
- undersized water mains in the distribution system that do not meet current standards;
- lack of a back-up power source to allow water to be pumped during an extended power outage;
- insufficient fire protection due to distribution system deficiencies and outdated and inoperable fire hydrants; and
- potential for backflow conditions to develop in the distribution system during a fire flow situation or main break that would draw contaminants into the system.

Fire protection at the school is significantly deficient. The required fire flow for the school is 3,000 gpm and only 300 gpm is currently available.

Technical Approach

The proposed project includes the construction of a new 273,000-gallon buried concrete storage tank that will increase storage for fire protection, stabilize distribution system pressure, and provide storage to meet peak system demands. The project also includes the construction of a new 10-inch PVC trunk main that will increase service and fire protection for the school and downtown commercial district. Installation of a back-up power supply (generator) and the replacement of 19 outdated inoperable fire hydrants will improve the system's reliability and fire fighting capabilities. The current proposed project is the first phase of improvements for the town's storage and distribution system. Subsequent phases will involve the continued replacement of the old and undersized water mains in the distribution system, which will eliminate the remaining leakage in the system and further improve fire protection.

Storage tank alternatives that were evaluated included the "no-action" alternative, a buried concrete storage tank, and a buried steel storage tank. The concrete tank alternative was selected because the concrete tank has a longer useful life, is less prone to corrosion, and does not have to be periodically repainted like the steel tank. One alternative that was not addressed for storage was installing an internal fire sprinkler system in the school. Structures with an approved internal fire suppression system have a lower fire flow demand and a lower required fire flow storage volume. The installation of a fire suppression system in the school may reduce the required storage volume needed by the community. This alternative was not mentioned, nor was it mentioned whether or not the school has a system already in place. Additional storage would still be required even if the school installs or has a fire suppression system. All other reasonable alternatives were discussed to resolve the storage deficiency. The alternatives evaluated for the distribution system, back-up power supply, and fire hydrants were the "no-action" alternative, providing a new generator, replacement of the old hydrants, and replacement of the old sections of distribution piping. All reasonable alternatives for these items were evaluated.

The maximum amount of storage required for fire flows at the school will not be provided. Calculations provided in the PER show that the required storage volume for the school is 540,000 gallons to provide a fire flow of 3,000 gpm for three hours. With the proposed storage tank and the existing storage tanks, a total of 300,000 gallons of storage will be available for fighting fire. The PER justifies the decision to provide the lower volume of storage with the following reasons:

- The town currently has only one fire truck with a, 2,000-gpm capacity, which may be upgraded to 2,500 gpm.
- The cost of the increased storage is not justified given the fire-fighting capacity.
- The state fire marshal is quoted saying "engineers and communities should be practical when designing fire flow capabilities; one large structure should not determine the needed fire flow for the entire community."
- The proposed storage volume of the new tank combined with the volume of the existing tanks will provide a fire flow of 2,500 gpm for two hours while meeting domestic system demands.

It is not often practical for small communities to provide the maximum required fire flows needed for large structures. The school and other large commercial structures have the option of installing their own internal fire suppression system to increase fire protection. The town has made a reasonable decision in selecting this alternative.

The proposed implementation schedule is reasonable for this project. Construction of the proposed improvements is scheduled for completion by the end of the 2006 construction season.

Project Management

The project engineer will perform the funding administration tasks and the town clerk will manage the fiscal aspects of the project. In addition to funding administration, the project engineer will be responsible for environmental reviews, project design, and construction administration.

Public involvement is included in the project management plan. Public meetings have already been held to obtain public input. Newspaper articles and newsletters have been written describing the project. The plan indicates that the town will keep the public involved throughout the remainder of the project through continued public meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$42,000	\$42,000
Professional & Technical	\$0	\$0	\$219,500	\$219,500
Construction	\$100,000	\$0	\$922,000	\$1,022,000
Total	\$100,000	\$0	\$1,183,500	\$1,283,500

The project budget is complete and appears to be accurate. Line items have been included for all foreseeable budget items including bond cost, legal fees, and interim interest. The town's combined water and sewer rate is currently \$73.29 (water \$29.27 and sewer \$44.02), which is 139 percent of the town's combined target rate of \$52.78. The applicant is relying on grant funding from three different sources and town reserves to fund the project. Loans are not part of the funding package, as the town believes it cannot take on more debt. If one or more of these grants are not awarded, the project in its present form is probably not viable because of the high user rates that would be required to service the debt load.

The O&M costs for the proposed project are reasonable, and the cost estimates for the construction phase appear to be accurate. The O&M requirements for the distribution system should decrease as leaking water mains are replaced. The alternatives that were selected will result in reasonable annual O&M costs.

Benefit Assessment

This project will conserve water resources. The water that is currently being lost to leakage will be available for use once the water main replacement program is completed. Construction of a new storage tank will allow the town to optimize water usage and enhance the management of the system. A new telemetry system will be installed that will increase the water system operators' ability to manage and control the water system. Public meetings and hearings have been conducted to obtain public input and are documented in the application. Letters of support from the public are included in the application.

Environmental Evaluation

Distribution system improvements will be constructed in existing roadways and rights-of-way, so environmental impacts should be limited to temporary impacts associated with construction such as noise and dust. The new storage tank will be constructed adjacent to the town's existing tanks on town property. The impacts associated with the tank will be limited to temporary impacts associated with construction. An environmental checklist was completed and appears to be adequate.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 23

Applicant Name	Ranch County Water and Sewer District		
Project Name	Water System Improvements		
Amount Requested	\$ 100,000	Grant	
Other Funding Sources	\$ 500,000	Treasure State Endowment Program (TSEP) Grant	
	\$ 450,000	USDA Rural Development Loan	
Total Project Cost	\$ 1,050,000		
Amount Recommended	\$ 100,000	Grant	

Project Abstract (Prepared and submitted by applicant)

The Ranch County Water and Sewer District was formed in November of 2003 with the goal of addressing existing system deficiencies and planning for long-term improvements. The system was installed in phases starting in 1975. The district was formed with the intent of funding needed improvements to the existing water system to meet DEQ standards for water facilities.

The Ranch County water system has the following DEQ deficiencies:

- Sample taps (Section 2.7)
- Finished Water Meter (Section 2.10)
- Source capacity must equal or exceed the design maximum day demand and equal or exceed the design average day demand with the largest producing well out of service (Section 3.2.1.1)
- Auxiliary power (Sections 3.2.1.3a and 6.6.6)
- Minimum protection depths of wells (Section 3.2.5.2a)
- Grouting requirements for wells (Section 3.2.5.7a)
- Well discharge pipe monitoring and valving (Section 3.2.7.3.4)
- Chlorination feed (Sections 4.1.5.3 and 4.3.2)
- Chlorination housing (Sections 4.3.6 and 5.1.14)
- No individual booster (Sections 6.4.4 and 8.9.2)
- Storage tank protection, drains and overflow (Sections 7.0.3, 7.0.5, 7.3.2, and 7.0.6)
- Distribution pressures (Section 7.3.1)
- Fire Hydrants (Section 8.1.5)
- Dead ends (Section 8.1.6)

The district needs to replace its entire 30-year-old system with a new well, 150,000-gallon storage tank to accommodate domestic and fire flow, a new pump house/chlorination facility, a new distribution network, fire hydrants, and meters.

Technical Assessment

Project Background

The original Ranch Development began in 1975 with the drilling of one supply well and construction of a 47,000-gallon storage tank and distribution system for a proposed 48-lot subdivision. The Ranch Homeowner's Association managed the system from 1993 until formation of the Ranch County W&S District in November 2003. The purpose of forming the district was specifically to address problems with the existing water system. The current population of 75 includes 20 permanent residential users and 10 seasonal residential users. There are no commercial or industrial users on the system.

The current Ranch water system consists of two production wells, the original 47,000-gal concrete storage tank, a sodium-hypochlorite disinfection system, and 4-inch diameter PVC distribution system piping.

The primary problems with the water system are the following:

- Supply does not meet DEQ-1 requirements for capacity and redundancy and one of the supply wells has no annular seal;
- Storage tank roof is in poor condition and allows contamination from natural sources;
- Disinfection system routinely fails and was not installed in accordance with DEQ-1 requirements;
- Distribution system exhibits very low operating pressures due to inadequate elevation of the storage tank and undersized mains and no looping; and
- The system has no provisions for fighting fires (inadequate storage, undersized mains, no hydrants).

Technical Approach

The project goal is to provide the community with an upgraded and efficient drinking water system that will ensure service for a 20-year period or longer. The main components of the project include:

- Construct one new well and provide an adequate seal for the existing well;
- Construct a new 150,000-gallon storage reservoir at a higher elevation to provide operational storage and fire-fighting capacity;
- Construction of a pump house building with new chlorination facility;
- Total replacement of the existing distribution system with adequately-sized mains;
- Installation of fire hydrants; and
- Installation of individual water meters.

Several alternatives, including "no-action," system upgrades with and without fire fighting capacity, rehabilitation of the existing storage tank, and connection to the Bigfork water system, were considered for each of the project components. Preferred alternatives were selected based upon initial cost, performance, present worth analyses, and anticipated adverse impact.

Most of the improvements will occur on property currently within the district's boundary. However, in order to site a new storage tank at the necessary elevation, the district must acquire some adjacent property and obtain an easement for the transmission main.

The recommended alternative will also include the installation of individual water meters on each of the residential users. This will allow for more equitable billing for usage and the ability to quantify leakage that may be occurring in the system or at the user's residence.

Project Management

The district president intends to take the lead in project management, utilizing a considerable amount of personal experience managing a large company. The district also anticipates hiring a grant administrator who will ensure that all necessary requirements for the funding programs will be met. Final design and construction management will be performed by the consulting engineer who will have a full-time resident inspector on site during project construction. The district has made an effort to keep the public involved in the project through newsletters and public meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$38,000	\$38,000
Professional & Technical	\$0	\$0	\$138,000	\$138,000
Construction	\$100,000	\$0	\$774,000	\$874,000
Total	\$100,000	\$0	\$950,000	\$1,050,000

The budget strategy provided in the application is reasonable if TSEP will agree to funding greater than \$7,500 per benefited household, which is the statutory limit without demonstration of serious need and financial hardship. The applicant is a local government, and has the ability to collect charges for debt and operation. Current residential charges for water service are \$10.42 per month. The projected residential rate is \$73.47 per month, and will affect 30 households. The projected rate exceeds, by 58 percent, the target rate of \$48.47.

For each of the project components, cost estimates were provided for the options considered and were used to help determine preferred alternatives. Engineering costs are within the typical range for a project of this magnitude.

The district is currently applying for a \$500,000 TSEP grant and an \$450,000 RD loan to cover the remaining project costs.

Benefit Assessment

The proposed project provides multiple renewable resource benefits, primarily related to the installation of well pump meters, individual water meters, a new well, and the anticipated wellhead protection program. The meters will allow the district to better manage and conserve its groundwater resource. The new well will allow further development of the resource. Grouting one of the existing wells and implementing a wellhead protection program will help the district preserve and protect the groundwater aquifer. The project will provide supply backup and redundancy, necessary for the city to manage and operate its system without service interruptions. Letters submitted with the grant application substantiate public involvement and support for the project.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. The beneficial results are primarily related to public health and safety issues. Included are the development of a backup water supply source and the reduction in potential for system contamination (through higher system pressures). The project will result in water use efficiencies and beneficial impact to the aquifer through the implementation of metering. Grouting one of the existing wells and implementing a wellhead protection program will also have environmental benefits with regard to the aquifer.

Short-term construction related impacts will be controlled through permitting and proper construction methodology including traffic control.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 24

Applicant Name	Libby, City of	
Project Name	Wastewater Collection System Improvements	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 12,000	Applicant
	\$ 79,000	Pollution Control State Revolving Fund (PCSRF) Loan
	\$ 500,000	Treasure State Endowment Program (TSEP) Grant
	\$ 1,400,000	U.S. EPA State and Tribal Assistance Grant (STAG)
	\$ 500,000	USBR Water Resource Development Act (WRDA) Grant
Total Project Cost	\$ 2,591,000	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Cabinet Heights area south of Libby consists of approximately 100 homes and a golf course, all of which utilize on-site wastewater treatment and disposal systems. In early 2004, a petition was submitted to the City of Libby requesting annexation of the area. Flower Creek is the City of Libby's source of drinking water. Water is currently supplied from the city's public water system.

Cabinet Heights has a history of drainfield failures. The 2004 Preliminary Engineering Report documented that 42 percent of on-site sewer systems in the area have failed. Of the 31 system failures in the area, 22 are located in the Cabinet View Trailer Court. Nine of the 22 are seepage pits that were installed because there was inadequate room on the lot for a drainfield. The current standards do not allow for seepage pit or cesspool systems. Currently there are 73 homes located on parcels less than the current legal lot size requirements.

It is believed that the on-sites systems also partly contributed to a 1997 landslide that occurred in the Flower Creek drainage immediately below the trailer court. The slide caused flooding problems, which led to property damage for some downstream residents. One home also had to be relocated due to its proximity to the slide area.

Following the mudslide, tests of water seeping in the slide area found nitrate levels exceeding 10 milligrams per liter and the existence of fecal coliform bacteria. The data clearly shows that sustained reliance on on-site systems will continue to contaminate groundwater and could lead to further slope instability along Flower Creek.

To address the problems identified above, it is recommended that a gravity collection system be extended in to the Cabinet Heights area from the City of Libby and that the existing on-site wastewater treatment and disposal systems be abandoned. The new collection system will direct wastewater from the area to the Libby wastewater treatment plant.

Technical Assessment

Project Background

The City of Libby is located in the northwest corner of Montana in Lincoln County, and is the county seat. The Cabinet Heights area is located south of the incorporated limits of the City of Libby and is bounded by Flower Creek to the west and Libby Creek to the east. The project area consists of several platted subdivisions, a trailer court, the Cabinet View Country Club, and a future 9-hole golf course expansion area. The 107 existing homes in the Cabinet Heights area are served by Libby's public water system, but have on-site systems for wastewater treatment and disposal. The on-site wastewater systems consist of both drainfield and seepage pit systems, which have been prone to failure over the last 30 years or so. Small lot sizes do not provide adequate replacement area for failed systems. It is believed that the on-site wastewater systems also partly contributed to a 1997 landslide that occurred in the Flower Creek drainage immediately below the

project area. A positive fecal coliform sample was collected from seepage water at the time of the mudslide, indicating rather clearly that the on-site wastewater systems are contaminating local groundwater.

A petition for annexation has been signed by more than the required number of property owners to allow the annexation of the Cabinet Heights area into the city. The city has indicated a willingness to annex the area and has the ability to handle the additional wastewater loading at the wastewater treatment plant.

Technical Approach

The project goal is to provide the Cabinet Heights Area with public sewer service, and in doing so abandon the on-site wastewater systems, most of which have not been performing properly. Design parameters are based on providing service to a population of 626 people, which includes 161 existing lots (107 with homes) and 100 future lots on the expanded golf course. Five collection system alternatives were considered in detail, with Alternatives 1 through 4 utilizing gravity sewer and lift station combinations. Alternative 5 proposed the use of septic tank effluent pump (STEP) systems.

The proposed project will thoroughly address the deficiencies with the on-site wastewater systems in the Cabinet Heights area. Alternative 4, the chosen alternative, consists of 1 lift station and over 12,000 feet of gravity sewer main. Connection to the existing collection system will be made at Montana Avenue, thus avoiding increased flows to the existing lift station at First and Montana Streets. STEP systems are proposed for about seven parcels on the southern end of the project that need to pump up to the new gravity sewer main. Implementation of Alternative 4 will provide a reasonably complete, cost-effective, and long-term solution. With connection to the public wastewater system, the Cabinet Heights area homeowners will no longer have concerns about failing on-site wastewater systems. The environmental problems of groundwater contamination and any hydraulic overloading of the soil with wastewater effluent will be eliminated.

Project Management

Implementation of the proposed project will require a significant amount of coordination between the city, engineering and financial consultants, DEQ, and other funding agencies. Competent, experienced staff will manage the proposed wastewater improvements project. All administrative duties are outlined in the project management plan, so that responsibilities are clearly established. Close coordination between responsible parties is explained. No problems are anticipated because the city has successfully completed grant-funded projects in the past.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$26,000	\$26,000
Professional & Technical	\$0	\$0	\$209,000	\$209,000
Construction	\$100,000	\$0	\$2,256,000	\$2,356,000
Total	\$100,000	\$0	\$2,491,000	\$2,591,000

The majority of the project will be financed with grant funds from four sources: TSEP, DNRC, STAG, and WRDA. The city is confident about receiving both STAG and WRDA funds to finance almost 75 percent of the budget costs. Should the STAG or WRDA funding not materialize, the city will seek funds from the Libby Area Development Council (LADC), which has been given \$11 million to help promote economic development in the Libby area. The proposed golf course expansion in the Cabinet Heights area would allow LADC funds to be applied to this proposed wastewater improvements project.

Since the Cabinet Heights residents are currently using individual on-site wastewater systems, they have not been paying sewer fees to the city. In late 2003 or early 2004, the Cabinet Heights/Highwood area residents successfully petitioned for annexation and the annexation process has begun. They will begin to pay a flat sewer fee of \$24.62 once they are annexed into the city and connected to sewer service. This rate is based on the existing \$19.00 per month sewer service charge and repayment of the PCSRF loan used to help finance the proposed project. Project costs are reasonable and well supported. Costs are based on bid tabulations from similar projects.

Benefit Assessment

The proposed project provides multiple resource benefits. Abandonment of the on-site wastewater systems in the Cabinet Heights area will eliminate a contaminant source to the local shallow aquifer, thus allowing better management of local groundwater. With connection to Libby's collection system, wastewater from the Cabinet Heights homes will be conveyed to Libby's wastewater treatment plant (WWTP). Much higher treatment of the Cabinet Heights wastewater will result. There is a plan to expand the golf course to 18 holes once public sewer is brought to the area. This expansion of the Cabinet View Country Club is expected to result in eight new jobs, two at the clubhouse and six on the grounds crew, according to the club's board chairman. The application included good evidence of public support for the project.

Environmental Evaluation

No apparent adverse long-term environmental impacts were noted. The overall impact on the environment will be a positive one. The on-site wastewater systems in Cabinet Heights are negatively impacting the shallow groundwater in the area with nutrients and are possibly impacting slope stability. Connection to the City of Libby's public wastewater system, with ultimate disposal at the WWTP, will eliminate these environmental concerns. The WWTP has been meeting its discharge limits; and design flows and loads will still be met, even with the additional flow from the Cabinet Heights area. Slope instability problems, as evidenced in the 1997 Flower Creek mudslides, will need to be considered during design of the sewer main down from the Cabinet Heights area to the existing sewer system. Short-term construction-related impacts will be controlled through permitting and mitigation requirements in the contract documents.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 25

Applicant Name	Broadview, Town of	
Project Name	Developing a Viable Water Supply for the Town of Broadview	
Amount Requested	\$ 99,997	Grant
Other Funding Sources	\$ 4,880	Applicant
	\$ 39,932	Montana Bureau of Mines and Geology (MBMG)
	<u>\$ 30,000</u>	MBMG through U.S. Bureau of Reclamation
Total Project Cost	\$ 174,809	
Amount Recommended	\$ 99,997	Grant

Project Abstract (Prepared and submitted by applicant)

This project proposes to develop a new water supply for the Town of Broadview. Broadview currently taps groundwater from the Eagle Sandstone, which is inadequate in quality and quantity. Additional water for fire suppression and irrigation of lawns and trees depends on the Broadview Pond; unfortunately, it has been dry for the past five years. Broadview has a history of water problems and shortages that are now dramatically worsened by the current drought. In the 1930s, Broadview had a shallow water supply that failed, resulting in a strong population decline. A fire in 1934 burned most of the town because of the inadequate water for fire suppression. Water prospects were so pessimistic at that time that the town actually sold the water tower to Lewistown for \$340. Broadview has shown significant potential to expand its role as a bedroom community to Billings. This potential has been hindered by the inadequate water supply. Residents are having difficulty maintaining healthy trees, lawns, and gardens, in addition to the hazard of insufficient water for fire suppression.

This project proposes to identify sites for developing groundwater resources. These sites will be identified from interpretations of recently published geologic data, historic hydrologic data, and hydrologic measurements collected during the project. This information will then be used to define geologically favorable sites for developing viable water supplies. This project will construct test wells and assess 2 to 4 locations for long-term water development. The assessment will include detailed measurements of groundwater quality and long-term aquifer testing to identify optimum pumping rates and impacts to nearby water resources. Finally, groundwater flow, recharge areas, and discharge areas will be mapped to help the Town of Broadview understand the long-term viability of these water supplies.

Technical Assessment

The proposed project would explore the feasibility of developing groundwater supplies for the Town of Broadview located in Yellowstone County within the Musselshell River watershed. The historic sources of the town's water are the Eagle Sandstone aquifer and a surface water source known as the Broadview Pond. The Broadview Pond has been dry for the past five years. A major component of the project would be to evaluate water quality and quantity and investigate potential impacts of water development to identified water sources.

Project Background

Adequate potable water is critical to the survival of the town, which has suffered a long history of poor water supply. Marginal water supply has limited development potential and led to the abandonment of small businesses and residences. Historical reports relate the selling of Broadview's water tower to Lewistown in 1939 for \$340 because the limited water supply was unable to fill the tower. More recent water problems include a house fire in the spring of 2002 in which the fire department was hampered by inadequate water supply and unable to save the house. Home insurance rates have doubled because of inadequate fire suppression capabilities and property values have decreased due to inability to maintain landscape vegetation.

The current source of Broadview's water is two wells tapping groundwater from the Eagle Sandstone. The sandstone aquifer yields are inadequate and the quality is poor as evidenced by the poor production rate of the city wells (10 and 24 gallons per minute to supply water for the entire town). Water from both wells contains high concentrations of sodium and sulfate. Broadview's potential to expand its role as a bedroom community to Billings is hindered by inadequate water supply. Residents cannot maintain healthy trees, lawns, and gardens and the water is insufficient for fire suppression.

Technical Approach

The applicant proposes to explore development of a new water supply for the Town of Broadview by characterizing the Eagle Sandstone Aquifer and investigating other geologic units for potential aquifers. The project includes the following activities, 1) identify potential aquifers through review of existing groundwater and geologic information, 2) install test wells, 3) measure groundwater quality and general aquifer characteristics, and identify groundwater recharge and discharge areas to understand the long-term viability of targeted water supplies.

Specific tasks include:

1. Compile existing hydrogeologic data and inventory water supply wells and springs in the study area
2. Drill test holes and install monitoring wells
3. Conduct aquifer response tests
4. Collect samples for water quality analysis
5. Document the results in a report and provide recommendations and information to the public

The preferred alternative was selected based upon the potential impacts to water supply if the project was not implemented and a new water supply was not identified.

Project Management

The project would be managed cooperatively by the town and MBMG. The project would be administered by the mayor and town council. The technical aspects of the project would be managed by MBMG.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$4,880	\$0	\$4,880	\$9,760
Professional & Technical	\$95,117	\$0	\$69,932	\$165,049
Construction	\$0	\$0	\$0	\$0
Total	\$99,997	\$0	\$74,812	\$174,809

This budget appears to be sufficient and reasonable to fund the proposed project.

Benefit Assessment

The primary benefits to renewable resources are resource development and management. The proposed project could result in measurable benefits of water availability to the town and a better understanding of the flow regime of the local aquifer.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. The beneficial results are primarily related to the collection of significant hydrogeologic data for use in making decisions about water supply and recharge sources and discharge areas. Minimal short-term construction related impacts (from installation of the monitoring equipment) should be expected.

Funding Recommendation

DNRC recommends grant funding of \$99,997 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 26

Applicant Name Montana Department of Natural Resources and Conservation (DNRC)
Project Name Martinsdale Outlet Canal Drop Structures Rehabilitation

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 28,080 DNRC - State Water Projects Bureau (SWPB)
\$ 12,138 Upper Musselshell Water Users' Association
Total Project Cost \$ 140,218

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Martinsdale Reservoir is an off-stream storage project constructed by the State Water Conservation Board in 1939. The reservoir, which stores 23,348 acre-feet, is located about 2 miles southeast of the town of Martinsdale. The project is owned and managed DNRC's SWPB. The Upper Musselshell Water Users Association (UMWUA) operates and maintains the project. Water from the reservoir is used primarily for irrigation, but is also used for water-based recreation.

Water is diverted into the reservoir thru a 2.5-mile supply canal whose diversion structure is on the South Fork of the Musselshell River. As members of the UMWUA call for water, it is conveyed back to the Musselshell River by means of another 2.5-mile outlet canal. In the canal between the dam outlet structure and the river there are four concrete drop structures. Drop number 1 is in fairly serviceable condition. However, drops 2, 3, and 4 are in the advanced stages of deterioration and need to be rehabilitated or completely replaced.

During 2002, remedial repairs were made to drops 3 and 4. These repairs were temporary and served only to keep the structures in operation until more extensive rehabilitation work could be completed. No repairs have been made to drop number 2; and the stilling basin portion of this 29-foot drop is in imminent danger of collapse. Further deterioration or actual collapse of these structures would render the project ineffective.

The funding in this request would be used to design and construct repairs and rehabilitations of the three concrete structures mentioned above. DNRC is requesting a \$100,000 grant to fund the project.

Technical Assessment

Project Background

The Martinsdale Irrigation Project, located in the Musselshell River basin, was completed in 1939 and serves 53 farms over 30,658 acres. The Martinsdale Reservoir is a 23,438-acre-feet, off-stream reservoir that is fed by a supply canal from the South Fork of the Musselshell River. The Martinsdale Outlet Canal conveys water from the Martinsdale Reservoir back to the Musselshell River for downstream use. The outlet canal is 2.5 miles long and drops a total of 40 feet from the reservoir to the river. This total drop in elevation is accomplished by 4 separate drop structures.

DNRC has been monitoring the deterioration of the drop structures for the past several years. Drop 1 is considered to be in serviceable condition, but drops 2, 3, and 4 are deteriorated and in need of rehabilitation or replacement. Temporary repairs were made in 2002, but more permanent repairs are necessary to ensure the structures don't fail.

Technical Approach

The main goal of the project is to preserve and protect the viability of the Martinsdale Project. A secondary goal is to alleviate the potential for severe sediment transport to the Musselshell River should one or more of the drops fail. These goals will be accomplished by repairing drops 2, 3, and 4 of the Martinsdale Outlet Canal.

Several alternatives were described and considered. Since all other factors appeared to be equal, the preferred alternative was selected based on cost. The preferred alternative appears to be reasonable. However, one alternative that was not explored was using the drops for micro-hydropower generation, which could potentially supply power needed for pumping irrigation water.

Project Management

DNRC's SWPB will provide project management. SWPB has more than adequate staff and experience to manage a project of this size and nature. The project does not require public input, but UMWUA members will be kept informed of all project-related activities.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$7,399	\$7,399
Professional & Technical	\$0	\$0	\$20,681	\$20,681
Construction	\$100,000	\$0	\$12,138	\$112,138
Total	\$100,000	\$0	\$40,218	\$140,218

The costs and budget strategy presented in the application appear to be reasonable. The applicant has the capacity to provide additional in-kind services if needed. Cost estimates for construction appear to be reasonable and within the range typical for the materials and services required.

Benefit Assessment

The main benefit of this project is infrastructure preservation. Failure of any of the drop structures would render the project useless until the drop(s) could be replaced. It is estimated that repairing the drops will extend the life of the Martinsdale Project, which is important for both irrigation and Musselshell River flows, for another 20 to 25 years. Secondary benefits include water conservation by eliminating leakage at the damaged drops, avoidance of erosion and sedimentation that would occur if the drop structures were not repaired and failed, and improved system management by improving the efficiency of the drops. Letters submitted with the application indicate public support for the project.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly evaluated and no apparent adverse long-term impacts will result. Short-term construction related impacts would be controlled through permitting and proper construction methodology.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 27

Applicant Name	Roosevelt County CD
Project Name	Fort Peck Irrigation Water Quality and Quantity Enhancement Phase I
Amount Requested	\$ 99,995 Grant
Other Funding Sources	\$ 59,798 Fort Peck Irrigation Project
	\$ 16,400 Fort Peck Water Users Association
	<u>\$ 5,200</u> USDA/Natural Resource Conservation Service (NRCS)
Total Project Cost	\$ 181,393
Amount Recommended	\$ 99,995 Grant

Project Abstract (Prepared and submitted by applicant)

The Fort Peck Irrigation Project (FPIP) is located in the southern portions of Roosevelt and Valley Counties, along the Missouri River. Water comes from two pumping stations on the Missouri River. The original irrigation project was built in the 1930s by the U.S. Bureau of Reclamation.

Project operations are funded totally by water user fees. The operating budget has been insufficient to do much more than deliver water. With the exception of four new pumps 20 years ago, very little new construction or rehabilitation work has taken place over the last 70 years because of the continual lack of funds. Water users have agreed to higher fees to help fund the needed rehabilitation. High value cash crops such as dairy quality hay, silage corn, and edible beans are becoming more important to the economy of the project. These high value crops demand more water, and drains and canals need to be revamped to handle the new demand. The overriding goal of the project's Phase 1 is to improve the system to maximize the beneficial use of the Missouri River water. Phase 1 will clean, grade, and shape the existing drains to drain the return irrigation water back to the Missouri River. Improving these drains will improve the in-stream flow for downstream users and enhance the quality of the return flows to the Missouri River. Improving the quality of the return flows to the Missouri River enhances the pallid sturgeon and the piping plover habit. It will also minimize the salinity of the land surrounding the drains. Improving the return flow keeps the water from sitting in the drains and becoming stagnant. Keeping this water moving will eliminate the now ever-present threat of

West Nile virus to human health. These improvements will improve water quality from reduced erosion, chemicals, and salinity in the return flows.

The project is undergoing an extensive monitoring program to enable the management of an aggressive water quality and quantity enhancement on the project in the future. Funds have been acquired to install flow meters on the pump outlet to measure exactly the amount of water that is being pumped into the canals. Once the water reaches the canals, the flow of water is also being measured coming out of the turnouts onto each individual water user's field. These two steps combined will give a firm figure on the amount of water that is distributed to the field and how much is transferred back to the river.

Technical Assessment:

Project Background

FPIP is located in northeastern Montana along the Missouri River in Roosevelt and Valley counties. FPIP extends from close to Nashua on the west to Wolf Point on the east. FPIP presently consists of two units, the Wiota Unit, 6,000 acres, located southeast of Nashua and the Frazer-Wolf Point Unit, 13,000 acres, stretching from south of Frazer to Wolf Point. Water for FPIP comes from two pumping stations of the Missouri River, one southeast of Nashua and one south of Frazer. Approximately 150 water users are affected by the project.

FPIP canals, laterals, structures, and drains were originally designed to deliver water to native hay fields or grazing allotments. The overriding goal of Phase I is to maximize the beneficial use of the existing pumped water allocation, while enhancing the drain water on return flows to the Missouri River. In order to accomplish this goal, the drains need to be cleaned and shaped to provide a clean, safe, and non-erosive transport of return flows back to the Missouri River. The project has numerous areas where return water ponds. These poorly drained areas cause problems for water users, including lost crops and stuck machinery.

Technical Approach

The goals of the project are to improve water quality and quantity in the Missouri River and to reclaim saline-affected cropland.

The first objective to meet this goal is to clean and shape 5 miles of drains and add 1 mile of new drain to enhance return flows to the Missouri River. The second objective is to return lands to production.

Four alternatives were evaluated for this project. Under the "no-action" alternative, salinity problems will worsen and groundwater quality will become degraded. The second alternative evaluated was the option to install sprinklers so that there is no irrigation run-off at all. This option is not economically feasible for FPIP at this time, and the drains would have to be cleaned and shaped anyway to accommodate snow run-off and rainfall. The third option is to completely abandon the acres that are problem drain areas. This option was not deemed viable for economic and environmental concerns. The fourth and preferred option is to clean and reshape two major drains and install a new drain in another section.

A preliminary resource inventory has been completed on the project. FPIP is currently in the planning and survey phase and has received a grant from the Fort Peck Tribe's Water Resource Office to complete this phase. FPIP will do its own design in-house. It is expected that a contractor will be necessary to complete the earthwork necessary to clean and construct the drains.

Project Management

FPIP will provide engineering and will coordinate with all local, state, and federal agencies. Roosevelt County CD will assist in the administration of the grant. It appears that there are reasonable resources available to manage the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$9,960	\$0	\$18,120	\$28,080
Professional & Technical	\$0	\$0	\$23,920	\$23,920
Construction	\$90,035	\$0	\$39,358	\$129,393
Total	\$99,995	\$0	\$81,398	\$181,393

The funding strategy for this project seems to be reasonable. The grant money will primarily go into the actual cleaning and building of the drains.

There are 250 users of the project, and they currently pay an assessment of \$14.00 per acre and expect to increase this to \$17.50 per acre. If needed, they will increase user fees in the future to support maintenance of the project.

Benefit Assessment

This project's main resource benefit is that of conservation of water and soil. Water will be saved and returned to the river and salinity in the soils should be significantly reduced. FPIP has purchased water meters and is in the process of installing them at pump locations. The water will contribute to uses downstream, including the Dry Prairie rural water system. Water quality will be preserved by lowering the amount of agriculture chemicals and sediment in the water. With better water management, land can be reclaimed and put into production.

Environmental Evaluation

Environmental impacts associated with this project will be only short-term impacts, such as dust and noise. The district will consult with all appropriate state and federal agencies to determine which, if any, permits are required for the rehabilitation of the project.

Funding Recommendation

DNRC recommends grant funding of \$99,995 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 28

Applicant Name: Buffalo Rapids Irrigation District
Project Name: Improving Irrigation Efficiency and Water Quality

Amount Requested: \$ 100,000 Grant
Other Funding Sources: \$ 181,840 Applicant
\$ 34,195 USDA Natural Resource Conservation Service
Total Project Costs: \$ 316,035

Amount Recommended: \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The proposal area covers 14,787 acres of the 45,647 contained within the Buffalo Rapids Project, located on 64 miles of the Yellowstone River in eastern Montana.

Buffalo Rapids has two primary concerns: water quantity and water quality. Secondary concerns are soil erosion, noxious weeds, and CO₂ emissions. Current conditions on the Project are a 30 percent overall irrigation water use efficiency; nitrate fraction in excess of 7 percent in the Lower Yellowstone River near

Glendive attributed to Buffalo Rapids; an estimated 10 tons of soil loss per acre from furrow erosion; and 2,100 acres of noxious weed infestation. Goals and objectives of the project include:

- Increase system efficiency by 20 percent
- Reduce nitrate loading by 50 percent
- Reduce soil erosion to sustainable levels
- Reduce noxious weed infestations by 75 percent
- Reduce CO₂ emissions by 5000 tons per year

The means to achieve the goals and objectives will be the most efficient and cost-effective method of addressing the problem developed through the NRCS Resource Management System planning for groups involved with laterals and on-farm planning. Construction is being done by Buffalo Rapids, which has the means and experience, with NRCS and USBR technical assistance. Since the first contracts were funded in October 1998, the district has installed over 150,000 feet of pipe, 2 AgriMet weather stations, a mile of canal liner, 4 center pivots, 51 surge valves, and over 100,000 feet of gated pipe.

The focus of this project involves the replacement of two open laterals with PVC pipe. The total cost of the project will be \$316,035, with Buffalo Rapids District I donating \$86,839 in materials, labor, and machine time; NRCS contributing \$34,195 in planning and follow-up; and landowners contributing \$91,558.

Technical Assessment

Project Background

The Buffalo Rapids Project was constructed by the U.S. Bureau of Reclamation (USBR) between 1937 and 1950. USBR owns the project and the irrigators operate and maintain the project. The project is comprised of two districts. Two District I lateral canals are the focus of this application. Approximately 200 acre-feet of water is per year lost from the two laterals due to seepage. District I includes 14,787 irrigated acres and uses the Yellowstone River as a water source.

Technical Approach

The goals of this project are to improve irrigation efficiency, reduce the sedimentation in return flows to the Yellowstone River, and maintain the viability of the irrigation project.

The objective of the grant project is:

- Replacement of two lateral canals with PVC pipelines
- Installation of flow meters on the pipelines

Replacement of the laterals with pipeline will eliminate the seepage. The flow meters will allow measurement of water conveyed through the pipelines.

The application considered numerous alternatives. The alternative selected is the most economically and technically feasible. The project's construction work will be completed primarily by the Buffalo Rapids Project staff. NRCS engineering staff will provide engineering and planning. The project schedule is documented with project completion expected by 2006.

Project Management

The project manager will manage the construction as well as carry out administration of the project. The project manager will coordinate with NRCS for engineering and planning.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$3,443	\$3,443
Professional & Technical	\$0	\$0	\$15,151	\$15,151
Construction	\$100,000	\$0	\$197,441	\$297,441
Total	\$100,000	\$0	\$216,035	\$316,035

The budget appears to be sufficient to fund the project. Material, labor, and equipment costs used to develop the budget appear reasonable and adequate. The costs of the alternatives presented were developed in a consistent manner. The selected alternative appears to be the most cost effective.

The proposed funding package is a reasonable mix of state and local funds. Local contributions will be in the form of in-kind work/services and funds.

The application indicates a total of 14,787 acres will be affected by the project. The total per acre assessment will not be increased. A portion of the current assessment will be allocated to this project.

Benefit Assessment

Long-term renewable resource benefits include management of water resources through improved conveyance efficiency for more efficient water use. This will result in a reduction in water diverted from the river. Resource conservation, protection, and development benefits will also be realized because of the improved operation. Quantification of water use will be assisted by use of the new flow meters.

Environmental Evaluation

No known long-term environmental impacts should occur from this project. Detailed information regarding wetlands, threatened and endangered species, soils, and water quality must be addressed in the final design report. The project sponsor must obtain all necessary permits.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 29

Applicant Name	Paradise Valley Irrigation District	
Project Name	Turnout Replacement Project	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 36,425	Applicant
Total Project Cost	\$ 136,425	

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Paradise Valley Irrigation District (PVID), located in Central Blaine County, is one of eight irrigation districts on the Milk River Project. PVID diverts water from the Milk River at Paradise Valley Diversion Dam, located about two miles southeast of Chinook, and delivers water to 57 farms totaling 8,310 acres through a series of canals and laterals. PVID takes water conservation serious as confirmed in the district's aggressive water

conservation program. PVID was nationally recognized for its water conservation efforts when presented with USBR Commissioner's Award in 2002.

This turnout replacement project is part of an overall plan to replace and standardize all of the district's turnouts. PVID has approximately 100 turnouts; so far, 30 old turnouts have been replaced with new standardized turnouts. The district's objective is to replace all the turnouts by 2008. Standardized Turnouts will improve the district's water management capabilities through greater operational control and accurate water measurement, which in turn provides more equitable and reliable service to the water users. This project complements the district's other water conservation efforts, and prepares PVID for future efforts.

This project will have positive impacts on a basin that suffers chronic water shortages from drought, over-appropriation, and deteriorating facilities. The district's efforts, in concert with other water conservation measures, contribute to cumulative water savings and improved water quality in the area streams.

Under this proposal, PVID will replace 50 old turnouts with new standardized turnouts on the main canal accounting for an estimated 10 to 20 percent increase in district-wide conveyance efficiency. The project will also improve delivery measurement accuracy by 30 percent.

Technical Assessment:

Project Background

Paradise Valley Irrigation District (PVID) is one of five irrigation districts that comprise the 37,273-acre Chinook Division of the Milk River Project. Constructed in 1920, the district irrigates 8,310 acres between Chinook and Harlem. Main components of the system include its Milk River diversion near Chinook, a 12.5-mile main canal, and a system of ditches and laterals.

PVID includes 57 farm operations. Alfalfa accounts for 70 percent of the crops grown, and small grains, potatoes, and canola comprise the remaining 30 percent. Flood and gated pipe irrigation are the predominant irrigation methods used.

The Paradise Valley Diversion diverts about 170 cubic feet of water per second, providing approximately 1.5 acre-feet of water per irrigated acre. The diverted flow is accurately measured, and the district has been proactive in making improvements to its system. The district adopted a water conservation plan in 2003, and historically has taken a serious approach to managing its limited supply of water.

The irrigation system includes 100 turnouts. Thirty of those have been replaced with standardized concrete turnouts. The district plans to replace all 100 of the turnouts by 2008. If awarded, this grant will be used to purchase and install 50 new turnouts, leaving 20 for the district to replace as funding allows.

Technical Approach

PVID has both short-term and long-term goals outlined in the Water Conservation Plan. The following goals are specific to this project:

- To increase water conservation by improving water use efficiency;
- To improve management by improving the accuracy of water measurement; and
- To improve water quality by reducing operational spills, return flows, and deep percolation.

The standardized turnout boxes being proposed in this application include a slide gate that will give the district the ability to accurately control the diversion at each turnout. Additionally, the new turnout boxes are designed to accommodate future flow measurement devices, as future funding will allow.

Project Management

The proposed project will be managed by a coordinator for the district under the direction of the district board of directors. The proposed funding scenario should not be difficult to manage, as it contains only one grant. The district plans to purchase the turnouts and to subsequently contract for installation. The district board

and the district coordinator have experience in irrigation project construction, and will manage the project to ensure safety, quality construction, and acceptable cost control and financial management.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$3,600	\$0	\$0	\$3,600
Professional & Technical	\$0	\$0	\$0	\$0
Construction	\$96,400	\$0	\$36,425	\$132,825
Total	\$100,000	\$0	\$36,425	\$136,425

The budget strategy provided in the application is reasonable. The applicant is a local government and has the ability to assess charges for debt and operation to the operators within the district. The current assessment is \$14.25 per acre per year; the projected assessment will be \$16.00 per acre per year.

Cost estimates were provided for the alternatives considered for the project. These costs are based on the costs that have been incurred by the district to replace the 30 turnouts completed to date and include a reasonable construction contingency of 10 percent.

The district plans to provide its share of the project costs from reserves and a one-time \$1.00 per acre assessment.

Benefit Assessment

The proposed project provides multiple renewable resource benefits. It is anticipated that the new turnouts with improved gates will result in conveyance efficiencies approaching 20 percent. This project does not include new or improved measuring devices at each turnout, but the turnout boxes are designed to accommodate measuring devices in the future.

The project will also allow for better management of the district's limited water resources. It will be easier for the operator to match deliveries to actual diversions, and the district will have greater control over operation of the system.

Additionally, the project provides preservation benefits in that it ensures the existing renewable water resource will continue to provide benefits to future farm and ranch operations within the district.

By improving water use efficiency and conservation, the project will provide, as an indirect benefit, the preservation of fisheries and wildlife habitat, thus lending itself to recreational and economic benefits for the citizens of Montana.

Environmental Evaluation

Adverse environmental impacts associated with this project will be minor and short-term. The beneficial results are primarily water conservation benefits that will ensure surface water for other downstream irrigators and instream flow and habitat preservation in the Milk River Basin. Short-term construction impacts will be minimal. The project is located on private land. Issues such as dust control, wetland access to project sites, or temporary impacts to surface water quality will be controlled by proper construction methodologies enforced by the district coordinator and individual landowners.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 30

Applicant Name	Manhattan, Town of
Project Name	Wastewater Treatment Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 500,000 Community Development Block Grant (CDBG) \$ 100,000 DNRC, RRGLP Grant (2003) \$ 2,937,016 Pollution Control State Revolving Fund (PCSRF) Loan \$ 500,000 Treasure State Endowment Program (TSEP) \$ 350,000 U.S. EPA State and Tribal Assistance Grant (STAG)
Total Project Cost	\$ 4,489,915
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant.)

The existing wastewater treatment system consists of a two-cell facultative lagoon, which was constructed in the early 1960s. The cells are unlined and leak severely, typically between the months of October and May, when groundwater levels drop after irrigation season. Seasonal leakage out of the lagoon is dramatic enough to detect visibly. Additional evidence of leakage is the fact that the system can operate without discharging several months of the year. In 1998, DEQ directed the town to address lagoon leakage. Additionally, the town has violated its discharge permit numerous times in the past several years.

Problems associated with the existing wastewater system include the following:

- Violation of Montana Pollution Discharge Elimination System (MPDES) discharge permits
- Beyond domestic design capacity
- Excessive seasonal leakage out treatment cells
- Inadequate sewage treatment due to hydraulic overloading
- Inadequate sewage treatment due to overloading of design biological oxygen demand and total suspension solids

Upon its completion in May of 2000, the original Preliminary Engineering Report (PER) was submitted to DEQ and approved. In June of 2001, the town received a notification from DEQ of a policy change invalidating the preferred alternative selected in the original PER. The town's wastewater treatment facility was then required to meet new interpretations of policies concerning aquatic life in the effluent stream from the treatment process. An effluent limit for ammonia is the most concerning result of this change in permitting policy. An amendment to the PER was prepared in 2004 as a result of the above, as well as the following:

- The results of flow monitoring that have taken place for almost a year show flow rates higher than those anticipated by the original facility plan.
- Three large developments have approached the town requesting connection to the wastewater treatment system. The design capacity in the year 2023 will be revised to reflect this new information.

The recommended wastewater treatment process identified in the amended PER is the STM Aerotor. The STM Aerotor achieves the treatment goals with the least operational complexity and long-term cost. The most important reasons for selection of an STM Aerotor are:

- ease of operation and mechanical simplicity;
- low O&M cost (less equipment and horsepower involved); and
- significantly enhanced quality of treated discharge waters.

Technical Assessment

Project Background

The original wastewater system serving the Town of Manhattan was constructed in 1916 and consisted of a small gravity collection system, a septic tank, and a surface water discharge, which eventually reached the Gallatin River. The collection system was significantly expanded and a two-cell facultative lagoon system was constructed between 1916 and the early 1960s. A system upgrade was completed in 1985, consisting of collection system rehabilitation, lagoon-piping modifications to prevent short-circuiting, and valve replacement. In 1995, DEQ noted that the lagoons leak, and advised the town to assess the leakage and remedy the situation. In 1998, DEQ directed the town to obtain a groundwater discharge permit or line the lagoons. Additionally, repeated violations of the MPDES Discharge permit have occurred.

A March 2000 TV inspection of the collection lines revealed a severe state of dilapidation of the old clay pipes. The existing two-cell facultative lagoon is unlined and leaks, typically between the months of October and May when groundwater levels drop after irrigation season. Seasonal leakage is dramatic enough to detect visibly.

The Town of Manhattan discharges treated wastewater to an unnamed drainage that flows about 2.5 miles to a slough of the Gallatin River. In November 1981, DFWP determined that the drainage did not appear to have a significant fishery or provide suitable spawning sites for nonresident fish. The Gallatin River is classified as a B-1 stream by the Montana Surface Water Quality Standards; however, the unnamed ditch was not classified. Consequently, water quality standards were established based on impacts to the Gallatin River.

A PER outlined proposed Wastewater Treatment Plant (WWTP) improvements. These improvements included the following:

- Phase I: Collection system improvements, sludge removal and disposal, and acquisition of 8 acres of land
- Phase II: Wastewater treatment and disposal upgrades, including an aerated lagoon, spray irrigation, and existing discharge.

In May 2000, the PER was submitted and approved by DEQ. In June 2001, the town received a notification from DEQ of a policy change invalidating the preferred alternative selected in the original PER. The effluent stream had been re-classified. The DEQ MPDES Discharge Permit had historically classified the effluent stream as a "ditch used for the conveyance of waste." Now the town's wastewater treatment facility was required to meet new interpretations of policies concerning aquatic life in the effluent stream from the treatment process. An effluent limit of ammonia is the most concerning result of this change in permitting policy. Two additional issues have surfaced since the completion of the PER. One issue is the results of flow that show flow rates higher than those anticipated by the original PER. The other issue is that three large proposed developments have approached the town requesting connection to the wastewater treatment system.

An amendment to the PER was prepared in 2004 as a result of the revised considerations. Flow monitoring rates were analyzed in the amendment, and the resulting information was used in the selection and sizing of the proposed treatment process.

Technical Approach

The amended PER addresses revisions to the recommended WWTP system only. The tasks that were previously included under Phase I of the original PER have been completed or have received funding to be completed.

The recommended wastewater treatment process presented in the amended PER is the STM Aerotor. The STM Aerotor is an activated sludge process that utilizes a unique method of aeration and mixing and achieves the treatment goals with the least operational complexity and long-term cost. The most important reasons the STM Aerotor was selected are:

- Ease of operation and mechanical simplicity;
- Low O&M cost; and,
- Treatment process that provides significantly enhanced quality of discharge waters.

Many alternatives were reviewed, described, and analyzed for this project. Environmental issues, cost, O&M, construction problems, land requirements, and compliance with regulations were all considered in the evaluations. A "no-action" alternative was evaluated. Complete cost estimates were provided for six alternatives in the first PER and four alternatives in the amendment to the PER. The application states that the low O&M cost is one reason for selecting the STM plant over the other reasonable alternatives. It has been a challenge for some of the community to accept the change from a lagoon system to a mechanical system, especially a less common system such as the STM Aerotor. The alternatives analysis, however, indicates it is the preferred alternative.

Project Management

The project management plan is complete and appears adequate for this project. The management team has been successfully working together on improvements, funding, regulatory compliance, and contractual issues for years.

The design, pre-construction, and construction duties associated with the proposed WWTP improvements will be managed primarily by the town's consulting engineer, in association with the Manhattan Town Council, town staff, and the town's representing attorney. The team will strive to maintain utmost compliance with local, state, and federal grants and loans, as well as procurement requirements. The town council is ultimately responsible for the proper management of the funds and the engineer is charged with assisting them with that task. The town, in conjunction with its consulting engineer, is presently administering the CDBG, RRGL, STAG, TSEP, and, PCSRF funds. The engineer and the town have been successful in administering these funds, as well as ensuring the timely fulfillment of the associated compliance requirements.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$324,459	\$324,459
Professional & Technical	\$0	\$0	\$683,420	\$683,420
Construction	\$100,000	\$0	\$3,366,577	\$3,466,577
Total	\$100,000	\$0	\$4,374,456	\$4,474,456

The wastewater system serves approximately 1,380 people with an estimated potential future population of 2,710 (not including the 3 new potential developments). The proposed budget appears reasonable. The cost estimate was complete and included contingencies, long-term O&M costs, and legal fees. The proposed budget covers the cost, but at the expense of the user's monthly rate. The sewer rate alone will increase to about \$54.43 per month. The town is pursuing rate reduction ideas such as: design modifications, elimination of the redundancy of the clarifier or an aerator basin, rate reduction of SRF loan, and additional STAG grants.

Funding for the majority of this project has already been secured through previous application cycles. The funding was based on the previous PER that recommended an aerated lagoon, spray irrigation, and surface water discharge. To date, the town has received grants and loans totaling \$4,389,915. These monies were obtained to assist the town to:

- Upgrade/replace their leaking collection system;
- Remove the excessive sludge in the existing facultative lagoons;
- Perform geo-technical investigations;
- Monitor sewage flow;
- Monitor stream flow;
- Acquire land for the new wastewater treatment system;

- Prepare the PER;
- Complete engineering design, construction, engineering inspection;
- Prepare an O&M manual; and
- Address administration, legal, contingency, financial costs, and a 10 percent reserve.

The town proceeded with its project and has replaced some of the sewer mains, removed the excessive sludge, completed the geo-technical investigation, monitored sewage flow, monitored stream flow, acquired land for the new system, prepared a PER as well as an amendment to the PER, and initiated engineering design.

The \$100,000 grant from RRGL will allow the town to complete the project now that it has been re-designed to meet new DEQ requirements for ammonia discharge levels.

Benefit Assessment

The project will preserve the quality of groundwater resources and enhance surface water quality in the Gallatin River. Documentation of permit violations and groundwater contamination were included in the application. The project will eliminate groundwater pollution from the leaking lagoons, prevent point source pollution to the ditch with better treatment, and reduce nutrient contamination of the Gallatin River. The applicant also suggests that the project will help curtail the uncontrolled urban sprawl on surrounding agricultural lands.

Environmental Evaluation

There are no long-term adverse environmental impacts anticipated with the proposed STM Aerotor system. The new system will enhance surface water resources because the treated wastewater will be of a higher quality than the existing lagoon discharge. Water quality in the conveyance ditch and the Gallatin River will be improved. Groundwater resources will be improved as a result of preventing the prolific lagoon leakage that occurs with the existing lagoon. The STM Aerotor will be built within the footprint of the existing lagoon, so there are no additional land requirements.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 31

Applicant Name	Woods Bay Homesites County Water and Sewer District	
Project Name	Water System Improvements	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 500,000	Treasure State Endowment Program (TSEP) Grant
	\$ 197,438	USDA Rural Development (RD) Grant
	<u>\$ 460,687</u>	USDA RD Loan
Total Project Cost	\$1,258,125	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

Woods Bay Homesites Lake County Water and Sewer District was formed in August of 2002. The system is old, and below DEQ standards for a public water system. The new district has been making repairs and providing water on a continuous basis. Major leaks have been replaced, but for financial reasons, the district has been able to repair only major problems. Water quantity is not adequate, and some areas experience extremely low pressures.

The Woods Bay water system has the following deficiencies:

- Leaking distribution lines
- Dead end distribution mains
- No water meters
- Undersized distribution mains
- No fire service
- Inadequate storage facility
- Low pressure
- Lack of supply for current users in area, causing frequent water restrictions

Total replacement of the system is the only complete and long-term solution. The district proposes to install new mains, new services with meters, fire hydrants, and utilization of a 140,000-gallon storage tank to be constructed in Sheaver's Creek Water District, contiguous to Woods Bay. Approximately 12,800 lineal feet of mains, 99 services, water meters, fire hydrants, and two connection points to Sheaver's Creek will be the scope of the new system.

Technical Assessment:

Project Background

Woods Bay Homesites, located approximately five miles south of Bigfork on the east shore of Flathead Lake, currently relies on a community water system that was constructed in 1967. In 2002, the subdivision formed a county water and sewer district (Lake County) to enable water system improvements and, eventually, construct a centralized sewer system.

Improvements to the existing system since its construction in 1967 have included a boost pump station to provide service to higher elevation properties as they were constructed, a new well to provide additional flows and backup as required by regulation, and the addition of a second concrete storage reservoir to meet system demands as the subdivision developed.

Two wells currently supply water to the existing system. Both slightly over 50 feet deep, their combined production of approximately 100 gallons per minute is insufficient to meet maximum demands as required for a public water system. Total storage capacity is 34,500 gallons and is insufficient to meet public water system average daily demand for non-commercial area fire flow requirements. The existing distribution system leaks badly and fails to provide adequate flows and pressures to all areas within the subdivision. The system does not include water meters, thus making it difficult to identify and locate leaks that do not surface. Without meters, homeowners have no incentive to be efficient and conservative in their use of water.

Technical Approach

The project goal is to provide the Woods Bay area with an upgraded and efficient drinking water system that will ensure satisfactory service for a 20-year period or longer. The main components of the project include:

- Tie-in to the adjacent Sheaver's Creek system and use that system's three new wells to augment the two existing production wells in the Woods Bay subdivision. The districts associated with each of the systems will combine into a single combined water and sewer district;
- Abandon the two existing storage reservoirs and use the new 140,000-gallon reservoir being constructed by Sheaver's Creek.
- Totally replace the existing distribution system; and
- Install water meters at all service connections.

Multiple alternatives, including "no-action", were considered for each of the project components. Preferred alternatives were selected based upon performance, initial cost, a present worth financial comparison, and relative environmental impacts.

Project Management

The district manager will take the lead in managing the financial and administrative aspects of the project. The project budget allows for funding to support the district in the financial and administrative management of the project. Construction management will be performed by the consulting engineer who maintains a permanent office in Kalispell and will be on-site daily and during irregular hours as necessary. Both the engineer and the district have kept the public informed during the development of the project and will continue to do so during the design and construction phases.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$48,500	\$48,500
Professional & Technical	\$0	\$0	\$210,000	\$210,000
Construction	\$100,000	\$0	\$899,625	\$999,625
Total	\$100,000	\$0	\$1,158,125	\$1,258,125

The budget strategy provided in the application is reasonable. The applicant is a local government and has the ability to collect charges for debt and operation. Current residential charges for the 99 households affected are \$30.00 per month for (for water only - there is no centralized sewer system); the projected residential rate is \$52.77 per month, which exceeds the "target rate" by \$16.60. With projected growth, the monthly rate per household will reduce to \$41.29, not including charges for sewer if a centralized system is constructed as planned. Based on the latest census data, the target rate for the area is \$36.17.

Cost estimates were provided for the options considered for each of the project components and were used to help determine preferred alternatives. Engineering costs are within the typical range for a project of this magnitude.

In addition to this RRGL application, the district is currently applying for TSEP grant funding and an RD grant and loan combination. If all funding applied for is not awarded, a phased construction scenario could proceed with beneficial results. The installation of water meters would provide conservation and management benefits to the system and fulfill the renewable resource benefits criteria for this program as a stand-alone project.

Benefit Assessment

The proposed project provides multiple renewable resource benefits. The existing drinking water distribution system now loses a substantial amount of the water pumped into it through leakage. This results in excessive pumping costs and water treatment and use inefficiencies. The project will provide supply backup and redundancy, necessary for the district to manage and operate its system without service interruptions. Additionally, water meters will encourage water conservation and will enable the district to better monitor and manage its system.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly evaluated, and no apparent adverse long-term impacts will result. The beneficial results are primarily public health and safety issues. Included are the development of a backup water supply and the increase in storage capacity to meet daily demands and ISO fire flow requirements. The project will result in electricity savings as well as water use efficiencies and better management practices.

Short-term construction impacts will be controlled through permitting and proper construction methodology including traffic control.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 32

Applicant Name	Custer Area-Yellowstone County Water and Sewer District
Project Name	Wastewater Collection and Treatment Systems
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 12,579 Applicant
	\$ 125,000 Coal Board Grant
	\$ 500,000 Community Development Block Grant (CDBG)
	\$ 117,894 Pollution Control State Revolving Fund (PCSRF) Loan
	\$ 500,000 Treasure State Endowment Program (TSEP) Grant
	\$ 14,343 TSEP PER Grant
Total Project Cost	\$ 1,369,816
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The current district's wastewater system is comprised of a gravity sewer collection system, a dry-well type lift station, and two facultative lagoons. The entire system was built in 1968 and there have been no major improvements to the system since that time, with the exception of one emergency replacement of approximately 400 feet of sewer in 1998.

Two of the three primary concerns could potentially be a serious threat to public health and safety:

1. The lift station is 34 years old. The wet well manhole ring is not secure and surface water may enter freely. The rungs are severely corroded which is a safety hazard to anyone entering the wet well. The concrete inside the manhole is eroding, and there is no straining mechanism inside the wet well. The dry well includes a small pump that is likely 34 years old and is incompatible with the larger pump. All controls are 34 years old. There is no room for expansion in the dry well, not even for a flow meter, which the system does not have. There is no grinding mechanism, and the downstream check valves frequently clog. There are several electrical outlets and components near or on the floor, creating a potential for electrocution.
2. The district's lagoons leak approximately 84 percent of the wastewater that enters. The first lagoon leaks so much that only rarely does wastewater trickle into the second lagoon cell. This results in a detention time of less than five days, which means that essentially untreated wastewater is directly entering the groundwater. The groundwater flows away from the townsite, but the entire community of Custer obtains its water from wells.

The amount of flow in the wastewater system varies with the water table. When the water table is high, water is entering the collection system and when the water table is low, the untreated wastewater is seeping into the groundwater from the collection system. This is a serious public safety and health threat, especially since the entire community of Custer uses wells for its water supply.

The proposed project would include building a new lift station, replacing the one-third of the in-town clay tile pipe and 2,650 feet of pipeline from town to the lagoons with a force main, and restructuring the lagoon cells to include two facultative lagoons and infiltration/percolation ponds. The new lift station would include a new meter and designed to eliminate the concerns noted above. The lift station would be located prior to the last 2,650 feet of sewer in order to allow for a force main. Installing a force main in place of the gravity sewer would eliminate the inflow and infiltration problem as well as prevent untreated wastewater from entering the groundwater. The new lagoons would include a liner to prevent leakage through the bottom of the lagoons and the inflow and percolation ponds would allow the wastewater to enter the groundwater only after it has been treated.

Technical Assessment

Project Background

The Custer Area-Yellowstone County Water and Sewer District is located in eastern Yellowstone County, about 55 miles northeast of Billings. It is located south of the Yellowstone River and the Northern Pacific Railroad, and just south of Interstate 94. The 59 homes in the Custer area have been served by a public wastewater system since the late 1960s, when the wastewater collection mains, lift station and two-cell lagoon were constructed as part of a Rural Special Improvements District. A Montana Pollutant Discharge Elimination System (MPDES) permit was issued for the lagoon system in 1974, but the permit was allowed to expire because no discharge ever occurred. The area is served by private water wells.

The wastewater system has seen no major improvements since it was created, with the exception of the replacement of approximately 400 feet of failed sewer main in 1998. According to the engineer, the lagoons are leaking approximately 84 percent of the wastewater that enters and treatment is therefore inadequate. The district's lift station has a leaking wet well, corroded manhole rungs, and other outdated components and electrical equipment. It also lacks a screening mechanism to prevent clogging. Flow measurement data and videotaping show that approximately 2,600 feet of gravity sewer main running from the community to the lift station below a cultivated field is receiving excessive infiltration/inflow (I/I) during the irrigation period. The PER questions the pipe's integrity due to the age and clay-tile construction of sewer pipe and suggests that there is excessive I/I in the collection lines serving the homes. There is concern that there may also be leakage from the collection mains, impacting the private wells.

Technical Approach

The project goal is to provide Custer with a new lagoon system that will not leak and will provide service for a 20-year design period, and to improve deficient lift station and collection system conditions. Six lagoon alternatives were analyzed in the PER, with a combination of treatment and disposal options. These alternatives varied by the number of cells, whether aeration was provided or not, and whether infiltration/percolation, spray irrigation, or total retention was used for ultimate disposal. Discharge to the Yellowstone River, as previously permitted, was not considered past the initial screening process due to the high anticipated cost and environmental impact. The alternatives were compared on the basis of cost, technical feasibility, operational complexity, and other key factors.

The chosen treatment and disposal alternative is a two-cell facultative lagoon with five infiltration/percolation cells. The proposed project also includes abandonment of the existing lift station and leaking asbestos-cement gravity pipe under the irrigated field. These components will be subsequently replaced with a submersible pump station and 2,635 feet of new force. Thirty-five percent of the collection system is also proposed for replacement under the project. Cleaning and videotaping will be used to identify the highest priority sections of pipe to replace. A reserve fund will be provided to continue replacement of deteriorated sewer mains, as necessary.

Project Management

The district will contract for a project administrator to assist in all phases of management. All roles of the project management staff are well-defined in the project management plan. Importance is placed on establishing duties at the start of the project, so that duties are not duplicated and responsibilities are set. The engineer is to be on-site full-time during all construction. The project management plan does a good job of providing for public input during the course of the project. Press releases will be prepared throughout the project and the public will be encouraged to attend monthly district board meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$32,300	\$32,300
Professional & Technical	\$5,000	\$0	\$150,736	\$155,736
Construction	\$95,000	\$0	\$1,086,780	\$1,181,780
Total	\$100,000	\$0	\$1,269,816	\$1,369,816

Grant funds from the CDBG, TSEP, Coal Board, and DNRC are proposed, in combination with a PCSRF loan to finance the proposed project. Application to the Coal Board is valid since the district is considered coal-impacted. The total project cost includes \$36,486 for writing of grant applications and the PER.

The district serves 59 households. When managed as a Rural Special Improvements District, the sewer rate was \$15.50 per unit. The initial rates were set to cover double the O&M expenses to collect funds for the PER and the proposed improvements. The current monthly sewer rate is \$22.50 per household and the proposed rate is \$29.50, which is 161 percent of the target rate of \$18.19. Since there is no public water system, sewer fees are on a flat rate basis.

Unit price breakdowns were provided for the lift station, collection system, and treatment and disposal alternatives. Costs are based on bid tabulations from rural eastern Montana and are reasonable. The cost for the lagoon liner seems high, but the application explains that the higher cost is due to recent increases in the petroleum product used to make the liner. The cost for sludge removal and disposal is at the low end of the range normally seen by PCSRF staff engineers. However, the engineer says that this cost is based on experience with other eastern Montana projects where area ranchers are anxious to receive the biosolids.

Benefit Assessment

The proposed project will eliminate leakage of inadequately treated wastewater to the local groundwater. Repairs to the public wastewater system will keep it in service, or preserve its use, for the community of Custer. Replacement of the sewer main and manholes buried under the irrigated field will eliminate a major source of infiltration/inflow to the wastewater treatment system. This will result in less water to be treated in the lagoon cells and less infiltration to groundwater. Replacement of the confined and deficient lift station with a new submersible lift station will provide the operator with a safer environment. The purchase of a generator will help ensure that homes are not inundated with sewage backup should there be an extended power outage. A 2004 needs assessment identified the wastewater system improvements as the highest priority community need. Creation of the district in February 2003 illustrates community support for the proposed project.

Environmental Evaluation

Sludge removal and disposal from Cell #1 should not be a problem, since adequate days of summer heat and the rapid percolation of the Cell #1 base soils should allow the sludge to dry out quickly. All construction will take place in previously disturbed areas. No additional land will be necessary for the proposed design, so no land will be taken out of agricultural use. The construction areas are not in the floodplain, and the lagoon is located more than 1,300 feet from the Yellowstone River. The Waco-Custer Canal is the closest surface water to the district, running about 150 feet upgradient of the southernmost district boundary. Noise, traffic rerouting, dust, and vehicle exhaust will be short-term nuisances in the area of project construction, but can be mitigated with careful construction practices.

The net environmental affects from the proposed project will be quite positive. Elimination of massive leakage from the first lagoon cell and the inflow/infiltration into the collection system will allow the proposed wastewater treatment facility to adequately receive and treat wastewater from the district before its ultimate disposal to groundwater in the Infiltration/percolation cells.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 33

Applicant Name	Fort Belknap Irrigation District
Project Name	Sugar Factory Lateral Project, Phase II

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 11,393	Applicant
Total Project Cost	\$ 111,393	

Amount Recommended	\$ 100,000	Grant
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Project Abstract (Prepared and submitted by applicant)

The Fort Belknap Irrigation District diverts irrigation water, from the Milk River into the Fort Belknap Ditch, then from the ditch into the Sugar Factory Lateral about 1 mile northwest of Chinook. The lateral is 4.19 miles long and provides irrigation for 621 acres (16 water users). The main area of concern (focus of the grant application) borders Chinook for 2,700 feet.

This is the second phase of a two-phase project that will reduce seepage losses (estimated as high as 33 percent) from the Sugar Factory Lateral that impact the irrigators' water supply, periodically flood yards of adjacent Chinook home owners, and potentially infiltrate the city's sanitary sewer system.

The first phase of the project received grant-funding approval and was originally scheduled for completion by spring of 2004, but due to state budget constraints, monies for design and construction will not be available for the project until after July 1, 2004.

During the preparation of the Phase I grant application, the district, in consultation with local officials, selected enclosing the lateral in a pipeline as the best alternative. Furthermore, seepage studies to identify other district ditch segments with severe seepage problems will also be conducted this summer as part of Phase I.

Enclosing the lateral in a pipeline continues to be the selected alternative. This solution conserves water, eliminates seepage issues, and addresses safety concerns.

Project goals are to conserve water through improved infrastructure; prevent seepage damage to Chinook residences adjacent to the lateral; improve public safety; and reserve the canal bank as a flood control dike for Chinook.

Technical Assessment

Project Background

Fort Belknap Irrigation District, one of five irrigation districts that operate and maintain distribution systems in the Chinook Division of the Milk River Project, includes 75 water users with 6,714 acres under irrigation. The Fort Belknap Diversion Dam is located about 7 miles northwest of Chinook and diverts water from the Milk River to the Fort Belknap Ditch. Approximately 40 cfs of irrigation water is diverted from the Fort Belknap Ditch into the Sugar Factory Lateral about 1 mile northwest of Chinook. This lateral is about 4 miles long and

serves a total of 16 water users over 621 acres; approximately 12 water users and 521 acres of the service area are located adjacent to and downstream of Chinook.

The Sugar Factory Lateral has significant seepage losses, estimated to be as high as 33 percent over its length. In addition to losing water, canal seepage near Chinook is causing loss of some farmland, flooding of residential yards, and softening of roadways. The stretch of the lateral that borders Chinook also creates a public safety and liability concern because the canal is used for recreation and swimming.

The district is planning to enclose a 2,700-foot stretch of the lateral that is adjacent to the City of Chinook in a pipeline to alleviate seepage and safety problems and to help preserve the canal bank as a flood control dike for Chinook. For budgetary purposes, the project was divided into two phases. Phase I, which will enclose the first 1,350 feet in pipeline, was approved for RRGL funding in 2003, but, due to state budget constraints, monies for Phase I were not available until after July 1, 2004. The proposed project, Phase II, is the second half of the two-phase project.

Technical Approach

The project goal is to conserve water and to reduce problems created by seepage in the stretch of the Sugar Factory Lateral that runs adjacent to the City of Chinook. This goal will be accomplished by enclosing a total of 2,700 feet of the lateral (1,350 feet in Phase I and 1,350 feet in Phase II) in a pipeline.

Alternatives evaluated in Phase I included using various types of canal linings and pipeline materials to stop seepage. Enclosing the identified stretch of the lateral in HDPE pipeline was selected for Phase I based on cost, logistics, and public safety. The alternative chosen for Phase II was the same as the alternative used in Phase I.

Project Management

The president of the Fort Belknap Irrigation District will act as project manager. The president will be supported by a three-member district board and a part-time secretary. The district's ditch rider will provide construction oversight. Consultants hired for the project will provide additional guidance based on their experience with similar projects. Since most of the project costs are for construction, project management should be straightforward and within the capacity of the proposed management structure.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$10,000	\$10,000
Professional & Technical	\$17,500	\$0	\$0	\$17,500
Construction	\$82,500	\$0	\$1,393	\$83,893
Total	\$100,000	\$0	\$11,393	\$111,393

The costs and budget provided in the application appear to be somewhat high, but are within the typical range for projects of this nature. Cost estimates for the project were developed by an engineering consulting firm that has experience with similar projects. The applicant, will be assessing an additional \$1 per acre fee, for a total of \$6,741 per year, in support of the proposed project.

Benefit Assessment

The main benefit of the proposed project is water conservation by reducing canal seepage over a 1,350-foot reach of canal. Secondary benefits include improved resource management by reducing liability from drowning hazard, resource development by allowing the irrigation of lands that are currently too wet to farm due to seepage and irrigating additional district lands with water saved, and resource preservation by reducing water quality impacts from canal erosion. Multiple letters submitted with the application indicate public involvement and support of the proposed project.

The project design requires that both phases of the project be completed in order to realize project benefits.

Environmental Evaluation

Environmental impacts of the proposed project were analyzed and no apparent adverse long-term impacts will result. Potential benefits include improved water quality from reduced canal soil erosion.

Short-term construction-related impacts will be controlled through permitting and proper construction methodology, including dust and traffic control.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 34

Applicant Name	Laurel, City of		
Project Name	Wastewater System Improvements		
Amount Requested	\$ 100,000	Grant	
Other Funding Sources	\$ 433,000	Applicant	
	<u>\$ 500,000</u>	Treasure State Endowment Program (TSEP) Grant	
Total Project Cost	\$ 1,033,000		
Amount Recommended	\$ 100,000	Grant	

Project Abstract (Prepared and submitted by applicant)

The City of Laurel's wastewater facilities are comprised of a wastewater collection system (sewers), two lift stations, and a wastewater treatment facility meeting national secondary standards. Many unit processes make up the treatment facility, including screening, grit removal, primary clarification, secondary treatment with rotating biological contactors, secondary clarification, chlorine disinfection, anaerobic digestion, and sludge drying.

The wastewater collection system was originally constructed in 1910. A majority of the collection system is comprised of vitrified clay pipe and has been in service for 50 to 100 years. More recent additions have been made with PVC pipe. Each of the two pump stations are over 20 years old. Historically, very little preventative maintenance was performed on the collection system.

The city's wastewater treatment plant is currently treating in excess of 1.0 million gallons per day of infiltrating groundwater during the summer months. During peak flow events, the plant is not able to treat to permitted effluent limits. Monthly violations have been prevented only through extraordinary efforts on the part of city staff. In addition to peak flow effects, several other areas of the treatment plant have been identified as needing upgrade in the near future to ensure continued permit compliance after nearly 20 years of service.

In addition to affecting the treatment plant, increasing amounts of infiltration and inflow are impacting the capacity of sewer mains within the collection system. Also, failure or back-up of sewer mains have led to release of raw sewage in basements and homes.

The top priority, Phase 1A, includes repairing/replacing the Idaho Avenue sewer main, the 8-inch sewer main connected to the larger 18-inch plant trunk main, and the wastewater treatment plant drain pump station. These repairs/replacements will reduce infiltration by approximately 40 percent.

The next priority identified (the proposed project) is a continuation of Phase 1A in reducing the infiltration by the remaining 60 percent. The proposed project includes the replacement of the lines in open fields. Together, the improvements from Phase 1A and the proposed project will reduce peak flow events by up to

1.0 million gallons per day during summer months, allowing the plant to treat to its permitted effluent limits, and preventing sewer back-ups.

Technical Assessment

Project Background

The City of Laurel's wastewater facilities are comprised of a wastewater collection system, two lift stations, and a wastewater treatment facility. The wastewater collection system was originally constructed in 1910. A majority of the collection system is comprised of vitrified clay pipe and has been in service for 50 to 100 years. The wastewater treatment plant is currently treating in excess of 1 million gallons per day of infiltrating groundwater during the summer months. During peak flow events, the plant is not able to treat to permitted effluent limits. In addition to affecting the treatment plant, increasing amounts of infiltration and inflow are impacting the capacity of sewer mains within the collection system. Also, failure or back-up of sewer mains has led to release of raw sewage in basements and homes.

Technical Approach

Through the comprehensive PER process, the City of Laurel has identified locations along trunk mains where infiltration/inflow contributions are particularly high and remedies can be cost effectively implemented. The city is currently undertaking improvements that are expected to eliminate approximately 40 percent of the 1 million gallons of infiltrating groundwater being treated by the treatment plant. The primary goal of the proposed project is to remove the remaining 60 percent of the groundwater infiltrating the wastewater system during the summer months, which will allow the plant to treat to its permitted effluent limits, and prevent sewer back-ups.

Alternatives were evaluated for replacing the identified trunk mains where infiltration/inflow contributions are particularly high. The PER included a justification for the basis of selecting the preferred alternative. The preferred alternative is the replacement of approximately 6,500 lineal feet of trunk mains in open, irrigated fields.

Project Management

The proposed project involves several agencies, and the city has decided to contract with a project administrator to manage the project from start to finish. The administrator will be responsible for keeping each funding agency informed of project progress. The project management plan outlines the duties for the project administrator, engineer, attorney, auditor, city clerk, and city council. This provides for a good staff of specialists to perform duties important to the project within their areas of expertise.

The city's proposed public involvement includes providing a discussion of project progress from bidding to completion stages in the monthly billings to the consumers. In addition to describing project progress, the billing will encourage residents to attend semi-monthly council meetings to give input. In addition, the city's newsletters will be utilized to provide project updates and encourage residents to attend council meetings.

The project management plan provides for thorough and well-organized contract management with regulatory and funding agencies, consultants, contractors, and other involved parties.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$38,490	\$38,490
Professional & Technical	\$0	\$0	\$134,510	\$134,510
Construction	\$100,000	\$0	\$760,000	\$860,000
Total	\$100,000	\$0	\$933,000	\$1,033,000

The project budget is complete and includes adequate detail to show that the proposed budget is sufficient to complete the proposed project. The applicant has applied for a TSEP grant in the amount of \$500,000 and has committed \$433,000 of city funds to the project.

The applicant is a local government and has the ability to collect charges for debt and operation. Current residential charges for wastewater service are \$30.10 per month; the projected residential rate is \$32.10 per month, and will affect 2,400 households. This will result in a residential utility bill (water and sewer) of \$74.50, which exceeds the target rate by \$18.13.

Cost estimates were provided for the options considered for each of the project components and were used to help determine preferred alternatives. Engineering costs are within the typical range for a project of this magnitude.

Benefit Assessment

The proposed improvements will reduce the peak flows currently being experienced at the treatment plant, which will result in a conservation of electricity at the plant and give the city the capability to properly manage the wastewater system. In addition, the city has had several sewer back-ups, which resulted in insurance claims against the city. Several claims were directly impacted by the infiltration from the open, irrigated agricultural fields. With this project, the city will be able to effectively manage any potential back-ups, minimizing their occurrences. Excess groundwater at the treatment plant could result in the overflow of unit processes at the treatment plant or the need to completely bypass to the Yellowstone River, resulting in untreated wastewater spilling onto the ground and entering the groundwater and/or partially treated wastewater entering the Yellowstone River. The proposed improvements will preserve the existing quality of both groundwater and surface water.

Letters submitted with the grant application substantiate public involvement and support for the project.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly evaluated and no apparent adverse long-term impacts will result. Short-term construction-related impacts will be controlled through permitting and proper construction methodology including traffic control.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 35

Applicant Name	Yellowstone Conservation District	
Project Name	Canyon Creek Stream Restoration, Education and Weed Control	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 10,000	Applicant
	\$ 14,500	In-kind
	\$ 111,995	MT Department of Environmental Quality 319 Grant
Total Project Cost	\$ 236,495	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

Canyon Creek is undergoing change from dominantly agricultural land use to urban. The 2000 census indicates 5,666 people within a two-mile block of the Total Maximum Daily Load (TMDL) impaired reach of Canyon Creek.

The projects consist of stream restoration, education, and weed control demonstration projects. The projects are a continuation of stream restoration, weed control, and surface- and groundwater impacts projects previously funded through the Yellowstone Conservation District. Canyon Creek is listed on the 2002 303d TMDL list for 16.1 miles from Highway 532 to the mouth. A high sediment load and poor water quality limit the fishery potential of Canyon Creek and its potential as a spawning tributary.

The stream is experiencing extreme bank erosion due to incision and lateral erosion, and increased runoff coming into the drainage. The incision and lateral erosion has occurred as the stream has cut through erodible fine-grained valley fill deposits. Areas of extreme bank erosion and gullying are common.

Two fairly large areas of existing noxious weed, primarily consisting of Russian and spotted knapweed and salt cedar were identified in the noxious weed inventory completed in 2003. Increasing urban development and consequent bank stabilization is compounding the problem.

The purpose of these projects is to develop a watershed management approach to the drainage and decrease extreme bank erosion and the resulting sedimentation, control the spread of noxious weeds, and educate the public regarding water use, erosion, and flooding. There are four components to the projects:

- The design and construction of up to three stream restoration demonstration projects;
- Education of landowners along the drainage to potential problems associated with construction of residential lots adjacent to the stream. These concerns include erosion, flooding (particularly those residing in a subdivision upstream of the 56th Street bridge), and water use.
- Implementation of two weed control demonstration projects to limit the potential for spreading of noxious weeds; and
- Development of Best Management Practices to provide a set of guidelines for future stream restoration and streambank stabilization projects.

Technical Assessment

Project Background

Canyon Creek is located in western Yellowstone County and includes a drainage area of approximately 14,200 acres. It flows into the Yellowstone River a few miles upstream from Billings. The lower 16 miles, from Highway 532 to the creek's confluence with the Yellowstone, is experiencing extreme bank erosion due to inherent soil properties, changes in historic land use, and increased runoff. The increased flows are due to greater urban and commercial demand on the drainage, as well as discharge of irrigation wastewater and discharge of overland runoff captured in adjacent drainages by three irrigation canals.

Dealing with the impacts of rapid development in Yellowstone County is becoming a larger problem each year. Development leads to soil disturbance, which allows existing noxious weeds and newly invading weed species to spread. As non-farm families move into traditionally rural areas, the populace has less experience with noxious weeds and their impacts on the environment.

The proposed project will allow the Yellowstone Conservation District to stabilize Canyon Creek at several key locations to educate landowners along the drainage on the subjects of erosion, flooding, water use, and weed control. It will also provide for development of management practices to be adopted and used by county and state agencies as well as local landowners.

Technical Approach

The proposed project has four components:

1. Design and construction of up to three stream restoration demonstration projects: one downstream from the King Avenue Crossing, where eroded and exposed banks have the potential to impact King Avenue; one at the 80th Street crossing where eroded and exposed banks have the potential to impact King Avenue and the 80th Street bridge; and one at Zoo Montana, where eroded and exposed banks have the potential to damage structures during relatively minor flood events. Channel controls,

possibly a series of bendway weirs or barbs, coupled with structural stabilization and revegetation of the lower banks are anticipated. The actual design for the stream restoration projects has yet to be done but will consist of rock rip-rap of the base flow channel banks and revegetation on the upper streambanks. The project would involve more than 4,500 feet of eroding streambanks.

2. Education of landowners along the drainage about potential problems associated residential development adjacent to the stream. Education would consist of public meetings and production of brochures and exhibits.
3. Implementation of two weed control demonstration projects to limit the potential for spread of noxious weeds. The demonstration projects will involve control of salt cedar, Russian knapweed, spotted knapweed, and other weeds on two parcels, one covering 127 acres and the other 77 acres.
4. Development of Best Management Practices to provide guidelines for future stream restoration and streambank stabilization projects. This will involve producing a set of guidelines for future stream restoration and streambank stabilization, riparian maintenance, and weed control for use by permitting agencies and landowners.

Project Management

The stream restoration and education portion of the project will be administered by the Yellowstone Conservation District. The district will employ an engineer to provide final design for the stream restoration projects, initiate the watershed education phase, and develop the Best Management Practices guidelines. The engineer will also coordinate the remaining environmental clearances and provide construction phase quality control. The Yellowstone County Weed Control Department will manage and complete the weed control demonstration portion. The district administrator will provide overall project management and supervise the engineering contract.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$10,000	\$0	\$23,462	\$33,462
Professional & Technical	\$16,225	\$0	\$18,000	\$34,225
Construction	\$73,775	\$0	\$95,033	\$168,808
Total	\$100,000	\$0	\$136,495	\$236,495

The proposed budget is clearly stated and appears reasonable in terms of the scope of work.

The project funding appears feasible if the district is successful in receiving a DEQ 319 grant of \$111,995. In addition to the 319 grant, the RRGL grant request of \$100,000 would be matched by \$10,000 from the district and in-kind contributions of \$10,500 from the district, \$2,000 from Montana Fish, Wildlife & Parks, and \$2,000 from NRCS engineers.

The primary expenses for the project involve placing rock rip-rap along eroded streambanks and spraying noxious weeds on private land.

Benefit Assessment

The proposed project will provide several renewable resource benefits, including improved riparian conditions, streambank stabilization, erosion control, and noxious weed containment. The development of Best Management Practices has the potential to improve water quality in the Canyon Creek drainage and reduce the spread of noxious weeds.

The project has letters of support from county government, Montana Tech, and the DNRC regional manager.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no long-term adverse impacts are anticipated. There may be short-lived turbidity increases in Canyon Creek associated with construction activities, although these will likely be mitigated.

Long-term environmental consequences are expected to be positive due to erosion control, streambank stabilization, improved management practices, and weed control.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 36

Applicant Name	Town of Valier		
Project Name	Wastewater System Improvements		
Amount Requested	\$ 100,000	Grant	
Other Funding Sources	\$ 500,000	Community Development Block Grant (CDBG)	
	\$ 819,000	Pollution Control State Revolving Fund (PCSRF) Loan	
	<u>\$ 500,000</u>	Treasure State Endowment Program (TSEP) Grant	
Total Project Cost	\$ 1,919,000		
Amount Recommended	\$ 100,000	Grant	

Project Abstract (Prepared and submitted by applicant)

Initial portions of the wastewater collection system were installed between 1908 and 1910, thus approaching a service life of nearly 100 years. Other than a 4-inch force main from the town's only pump station, pipe sizes range from 6 to 12 inches, and pipe materials include clay, PVC, Orangeburg, and asbestos-cement. There is over 35,000 feet of collection main and approximately 50 manholes.

The town has been proactive in dealing with problems within the existing collection system. Beginning in 1998 the town replaced ten blocks of sewer main. In June 2001 6,300 feet of sewer main was video inspected. This video inspection clearly reveals the cracked and deteriorating condition of the pipe. These cracks compromise the structural integrity of the pipe, allow root penetration, mineral buildup and allow excessive infiltration.

Approximately 2,000 feet of the wastewater collection system is comprised of Orangeburg pipe, which has a history of flattening to an oval shape over time. Recently, the town has had to replaced small, plugged portions of the Orangeburg pipe. In addition to flattening, the pipe walls have peeled away on the interior. The peeling was excessive and caused plugging problems.

The town is deeply concerned about the age and deterioration of their collection system. Rather than continuing to complete spot repairs as sewer mains plug, the town has taken a proactive approach and has begun targeting areas of the collection system that need to be replaced. With this in mind, the town contracted with Nash Enterprises in 2001 to video inspect nearly 6,300 feet of the collection system. Copies of the inspection reports are included in Appendix L of the Preliminary Engineering Report.

Nearly 10,000 feet of the sanitary sewer collection system piping requires replacement due to deterioration. Three general alternatives for replacing the clay pipe have been identified and include open cut excavation, pipe bursting (trenchless), and sliplining (trenchless). Sliplining is the most favorable alternative considering cost and surface disturbance, but the PER also recognizes that open cut excavation will be necessary in some areas due to sagging pipe or service connection replacement.

Secondary replacement recommendations (Phase 2) include Orangeburg pipe replacement, which has already caused blockage due to pipe failure. Orangeburg pipe replacement is determined to be secondary because of the considerably lower service population in each of the four identified areas.

Technical Assessment

Project Background

The Town of Valier is located in north-central Montana approximately 75 miles north of the city of Great Falls and 40 miles east of Glacier National Park. The town's existing wastewater system consists of a new three-cell aerated lagoon system that was constructed in 1999. Effluent from the lagoon is currently not disinfected and is discharged into an unnamed tributary of the Marias River. The town's collection system consists of vitrified clay pipe, Orangeburg pipe, and PVC pipe in recently replaced sections. The original collection system was constructed in 1908 and 1910. Ten blocks of the collection system were replaced in 1998, and a portion of the outfall line to the treatment lagoons was replaced in 2002. The remainder of the collection system is very old, in poor condition, and is reaching the end of its useful life. There are significant problems with the existing collection system, including root intrusions, cracked pipe, separated joints, and persistent plugging problems. There is a significant amount of infiltration and inflow of groundwater and storm water that enters the collection system during storm events and periods of high groundwater. Untreated sewage leaks out of the collection system and enters the groundwater when groundwater levels recede below the elevation of the collection system piping. The town will be issued a new wastewater discharge permit in the near future. The new permit may require that the town disinfect effluent from the aerated lagoons prior to discharge. It is not yet known if this requirement will be placed in the new permit.

Technical Approach

The entire wastewater system was addressed. A new treatment system was constructed in 1999 and is currently performing adequately and should do so through the planning period.

All reasonable alternatives for addressing the issues with the collection system were addressed. The alternatives included the "no-action" alternative, replacement by traditional trenching methods, replacement by pipe bursting and rehabilitation by slip lining. The preferred alternative is to rehabilitate the existing collection system by slip lining, and replace collection mains by traditional trenching methods where slip lining is not possible. The selected alternative represents a cost-effective solution for the community. Slip lining has the lowest capital cost and will result in the least amount of surface disturbance. Slip lining is a proven technology that will result in a long-term solution to resolve the collection system problems. The new liner will be watertight with no joints, eliminating the infiltration, inflow, and leakage problems. The lining systems are typically designed to withstand earth and traffic loads even if the carrier pipe were not present. The potential for sewer main failure will be eliminated.

Permit requirements for the proposed project will be minimal, as the project involves the rehabilitation of an existing collection system. A storm water discharge permit for construction will be required and is discussed in the PER. The environmental consequences of each alternative are discussed. The environmental impacts associated with the project will be limited to temporary impacts associated with the construction of the improvements.

The schedule indicates that the design of the improvements and DEQ approval will be initiated in late summer of 2005, with final approval of the design obtained in early 2006. Construction will be completed in the 2006 construction season.

Adequate supporting data was provided in the PER, including an infiltration inflow analysis that verified and quantified the collection system's infiltration/inflow and leakage problems. The collection system was evaluated with a TV inspection. The results of the TV inspection verified the structural problems with the collection system, including cracked pipes, separated joints, mineral build-up, and root intrusions.

Project Management

The applicant has a sufficient staffing plan for the project. The mayor and town council will have ultimate authority for the project. The designated city council representative will serve as the day-to-day project manager. The town clerk-treasurer will be responsible for coordination with the funding agencies, including verification of agency requirements. The project manager, with the assistance of the clerk-treasurer, will also be responsible for setting up the required project files for the funding agencies. The town has an attorney who can be consulted for legal matters. The project engineer will perform the design and construction

administration for the project. The costs associated with project management are reasonable for a project of this magnitude and complexity.

Public involvement is part of the project management plan. Two public hearings were conducted to obtain public input. Public meetings, press releases, etc., will continue through design and construction to keep the public informed of project progress.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$119,000	\$119,000
Professional & Technical	\$ 0	\$0	\$300,000	\$300,000
Construction	\$100,000	\$0	\$1,400,000	\$1,500,000
Total	\$100,000	\$0	\$1,819,000	\$1,919,000

The project budget is complete and appears to be accurate. The proposed debt load will result in rates that are affordable. However, the applicant is relying on grant funding from three different sources. If one or more of these grants are not awarded, the project in its present form is probably not viable because of the high user rates that would be required to service the debt load. The applicant states that if either the TSEP or CDBG grants are not awarded, the project will be abandoned or the scope of the project will be significantly reduced.

The O&M costs for the proposed project are reasonable, and the cost estimates for the construction phase appear to be accurate. The O&M requirements for the collection system should decrease. An annual O&M cost for sewer cleaning is included in the O&M budget. The alternatives that were selected will result in reasonable annual O&M costs.

Benefit Assessment

The proposed project will rehabilitate the town of Valier's existing sewage collection system. The improvements will reduce or eliminate infiltration and inflow of groundwater and storm water into the collection system during periods of high groundwater levels. The improvements will also reduce or eliminate the leakage of untreated sewage into the groundwater during periods of low groundwater levels. The project preserves the quality of the area's groundwater by significantly reducing the contamination from the town's sewage collection system. The project will also enhance the quality of the water in Lake Frances, in turn improving aquatic habitat and recreational opportunities.

Environmental Evaluation

The collection system improvements will be constructed in existing roadways and right-of-ways so environmental impacts should be limited to the temporary impacts associated with construction, such as noise and dust. Slip lining existing sewer mains will minimize surface disturbance, and, as a result, minimize environmental impacts. The overall environmental impacts for this project will be beneficial. Groundwater contamination from leaking sewer mains will be reduced and risk to human health will be minimized. An Environmental Checklist was completed and appears to be adequate.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 37

Applicant Name	Town of Fairfield	
Project Name	Wastewater System Improvements	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 1,213,800	Pollution Control State Revolving Fund (PCSRF) Loan
	\$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	\$ 1,813,800	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant.)

The original wastewater system in Fairfield consists of a conventional gravity system of asbestos-cement sewer pipe together with manholes. Additional, sewage collection pipe has been added to the system since the initial installation. The addition to the sewer system consists of polyvinyl chloride (PVC) pipe. The sewer lines have been cleaned as needed; a number of them were plugged with small rocks, silt, and large gravel. Greases were also noted in the cleaning reports. Minor sewer main repairs have occurred throughout the history of the system, but no major replacement or rehabilitation projects have been completed.

The treatment system consists of a single cell, facultative discharging lagoon that was constructed with the original collection system. The treatment system is located northwest of Fairfield approximately 0.5 mile away. The lagoon is approximately 11 acres with an average depth of 5 feet. Although an effluent outfall replacement project has been considered by the town council in recent years, no major improvements have been implemented at the treatment facility since its original construction.

The existing sewer backs up on a regular basis, in both private residences and public facilities. From April 1996 to May 1999, the sewer backed up 5 times at local schools and once at the town's community center. The potential for human contact with untreated wastewater is a large concern with the Fairfield wastewater system.

Excessive infiltration and inflow into the town's collection system and outfall piping create hydraulic overloading of the sewer mains and treatment facility. Evidence indicates that partially treated wastewater is entering the town's shallow aquifer. The treatment facility has reported a number of permit violations over the previous ten years and the existing treatment system does not satisfy a number of current DEQ design standards (detention time, leakage limits, and BOD removal). Finally, non-degradation and Montana Pollution Discharge Elimination System permit limits will become an issue in the near future as the DEQ Permitting Section proceeds with issuance of a new surface water discharge permit. Based on historical data and recent sampling, it does not appear that the existing system can adequately treat BOD to meet the impending discharge permit. DEQ staff also indicated that effluent disinfection was a strong possibility. The existing wastewater facility cannot adequately meet current needs and future sewage contributions. The Town of Fairfield has no choice but to implement improvements to the wastewater facility.

Based on an alternative evaluation, estimated project costs and associated user rates, a phased approach is recommended from the PER. Phase I includes comprehensive televising and cleaning of the town's sewer infrastructure, replacing outfall piping, and improving the (partial) treatment facility. Phase II will complete reconstruction of the existing single-cell facultative lagoon with a three-cell aerated lagoon, UV disinfection, and continuous discharge.

Technical Assessment

Project Background

The original wastewater system in Fairfield was constructed in 1956. The system consists of a conventional gravity system of asbestos-cement sewer, and a 12-inch diameter outfall to a single-cell facultative discharging lagoon located approximately 0.5 mile out of town. The collection system has been expanded over the years with new PVC pipe. The lagoon is approximately 11 acres in area with an average depth of 5

feet. Although an outfall replacement project has been considered in recent years, no major improvements have been implemented at the treatment facility since its original construction.

The collection system has had sewer backup occurrences on a regular basis. They have occurred in both private residences and public facilities. During a period from April 1996 to May 1999, five separate instances of sewer backups at local schools and a single event at the town's community center were documented. Excessive infiltration and inflow (I/I) into the town's collection system and outfall piping create hydraulic overloading of the sewer mains and treatment facility. Partially treated wastewater is entering the town's shallow aquifer. The treatment facility has also reported a number of permit violations over the previous 10 years. The existing treatment system does not satisfy a number of current DEQ design standards (detention time, leakage limits, and BOD removal), nor does it appear that the existing system can adequately treat BOD to meet the impending renewed discharge permit. Deficiencies within the system can most commonly be attributed to the age and capacity of infrastructure.

The existing wastewater facility cannot adequately meet current needs and future sewage contributions. The Town of Fairfield has no choice but to implement improvements to the wastewater facility.

Technical Approach

Flow monitoring data and operator reports indicate that certain areas within the collection system may demonstrate greater deterioration and inflow and infiltration contributions than others. Flow monitoring completed in 1998 indicated that I/I into the outfall outside of town is considerable (400 gpm). A comprehensive flow monitoring and televising study to identify collection mains in poor condition will be implemented. Outfall replacement or rehabilitation will be necessary prior to startup of a new treatment system in order to reduce the hydraulic loading to an acceptable design level.

The proposed wastewater treatment system is a three-cell aerated lagoon with UV disinfection, and continuous discharge. Due to the anticipated great financial burden the proposed improvements will place on the community, the applicant proposes to approach the project in a phased manner. Phase I will include televising the collection mains, and implementing flow monitoring; replacement of the outfall; and partial construction of the aerated lagoons. Phase II which is proposed to occur after the next funding cycle, will complete the construction of the wastewater treatment system. Replacement of the collection mains within town will be included in a Phase 2 or a Phase 3 project if a capital improvements program for repairs is not feasible.

Project Management

The project management team includes the mayor (coordinate with council, review technical documents, contracts, and expenditures), finance officer (maintain project financial records, coordinate with the grant administrator, and track project accounting), and engineering consultant (grant/loan administrator and project engineer). The team seems adequate for successfully managing the project. The town has solicited comments from federal and state agencies to determine if there are concerns regarding the project. As the project proceeds, the town and engineer will coordinate with the agencies to ensure that regulated activities are properly permitted.

The town has had several public hearings in recent years in order to inform the public about proposed utility improvements and the rate increases. A public meeting held on March 10, 2004, was well attended by more than 20 people. Letters were received from 26 people supporting the project. Throughout the implementation of the project, the town intends to hold routine public meetings in order to educate/inform the public with regard to project status.

The application states that the town has a history of working with both grant management and engineering consultants on numerous public facility projects. The contract between the town and its consultant includes specific project duties, deliverables, due dates, and compensation arrangements. The consultant will provide the town with routine progress reports and presentations to the town council. The mayor will be active in the funding process. A specific number of meetings between the engineer and the town would be identified in the agreement.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$158,800	\$158,800
Professional & Technical	\$50,300	\$0	\$125,000	\$175,300
Construction	\$49,700	\$0	\$1,430,000	\$1,479,700
Total	\$100,000	\$0	\$1,713,800	\$1,813,800

The Town of Fairfield has a population of approximately 660 people. The projected population for the year 2024 is approximately 864 people. The proposed budget for the Phase I project is reasonable. It includes phasing the project to reduce the financial burden on the users. The current sewer rate is \$20.00 per month. With the implementation of Phase I, the sewer rate will increase to \$37.00 per month. Phase II will require approximately an additional \$965,000 in funding. It is anticipated that the rates will increase to \$50.55 with the second funding cycle. The town has been approached by two separate developers with annexation requests. If the number of users increases, the financial burden on the individual user will be reduced. The cost estimates for the proposed projects are reasonable and comparable to other projects of similar nature. Other alternatives considered had higher present worth costs than the selected alternative.

The town has local reserves that, if possible, may be used to offset PCSRF loan reserve requirements.

Benefit Assessment

Improvements to the wastewater treatment system will result in eliminating or reducing discharge of partially treated wastewater to the groundwater through seepage from the existing lagoon. The project will conserve and protect natural resources for current and future beneficial use by maintaining or improving water quality in the receiving waters. Improvements to the collection system and outfall will reduce or eliminate excessive I/I into the wastewater system. Once the collection system is repaired and the I/I flows are eliminated, wastewater will be less diluted and, it is anticipated, the existing single cell lagoon will not provide adequate treatment of the wastewater for discharge to the drainage ditch, which flows to Freezeout Lake.

Repairs to the wastewater system will improve the town's ability to control and administer the renewable resource (treated wastewater) by creating more efficient facilities to contain, treat, and dispose of wastewater effluent. It will no longer discharge inadequately treated wastewater effluent to the receiving waters, or leak to the groundwater.

The improvements to the system will preserve existing groundwater and surface water quality.

Environmental Evaluation

Construction of the proposed outfall and aerated lagoon will be completed in the same location as the existing system. Consequently, short-term, adverse environmental impacts may be associated with the project, but with the exception of an increase in electricity use, there are no long-term adverse impacts anticipated. The Environmental Checklist was completed and included with the application.

If anything, the project will result in positive environmental impacts by reducing or eliminating the discharge of inadequately treated effluent to the drainage ditch and eventually Freezeout Lake, and surrounding wetlands areas. It will also reduce or eliminate unauthorized discharges to groundwater due to leakage in the existing lagoon. The plan includes land application of the sludge from the existing lagoon. The sludge has been tested and results indicate that typical land application disposal methods will be acceptable.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 38

Applicant Name	Glasgow Irrigation District
Project Name	Vandalia Diversion Dam Rehabilitation Phase III - Struts & Walkways
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 21,337 Applicant
Total Project Cost	\$ 121,337
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

This proposal is for a grant to continue rehabilitation of Vandalia Diversion Dam. Constructed between 1913 and 1917, Vandalia Dam is the only diversion structure for Glasgow Irrigation District (GID). After more than 85 years of continuous operation, the facility is in need of significant rehabilitation. Phase I rehabilitated the canal inlet and tunnels. Phase II rehabilitated the north bridge pier. Phase III will continue rehabilitation of the dam with the struts and walkways.

Rehabilitation will preserve the structural integrity of Vandalia Dam, which is vital to delivery of irrigation water to district members. The district includes approximately 106 farms covering 18,011.47 acres. A rural population of approximately 591 persons relies on the project facilities for irrigation water delivery. Numerous others depend on the reservoir created by Vandalia Dam for irrigation pumping. Sportsmen enjoy the use of the reservoir for fishing. Water users upstream (irrigators and municipalities), will also benefit indirectly from the project.

The project facilities are the economic backbone of our agriculture community, and the key to the economic stability of the communities of Vandalia, Tampico, Glasgow, and Nashua. GID has been working since the late 1980s to rehabilitate, repair, and modernize project facilities. GID has completed a \$2.2 million federal rehabilitation and betterment loan project and several cost share grants with DNRC. District members have reduced their annual economic return in order to meet financial responsibilities created by the 1995 federally funded Rehabilitation and Betterment loan.

GID proposes to provide conservation of the district's water resources by improved efficiency, reducing seepage and spill; improve management of the water resource by better utilization of flows during the irrigation season; and maintain water deliveries to irrigators by preserving the integrity of Vandalia Dam.

Technical Assessment

Project Background

Vandalia Diversion Dam is located on the Milk River, about 3 miles west of Vandalia in Valley County. The dam diverts water into Vandalia Main Canal for irrigation of land near Vandalia, Tampico, Glasgow, and Nashua.

The dam was constructed between 1913 and 1917 and has been in continuous use since then. Regular maintenance and inspections have been completed over the years by the district and USBR. An engineering analysis of the structure was completed by a private engineer, leading to recommendations for repairs in several phases. This project will be the third phase of this proposed long-range plan for complete rehabilitation of the structure. The struts and walkways have undergone damage mainly from freeze-thaw cycles. Further, due to the lack of trash protection, the struts and walkways have sustained damage from large trees and other trash washed into the backside of the dam during high flow turbulence. Some of the struts and walkways have completely been demolished by ice flows. The demolished walkways have been replaced and trash racks installed.

Technical Approach:

The primary goal of the project is to preserve the integrity and increase the service life of Vandalia Diversion Dam. A secondary goal is to conserve the water resources available to the district. Reduced losses due to seep and spill will increase utilization by district members and other upstream users who benefit.

The objective of the project is to rehabilitate the struts and walkways of Vandalia Diversion Dam. The project (Phase III) is the next step toward complete rehabilitation of Vandalia Diversion Dam.

An alternative analysis was completed for this application. Alternatives considered included:

- do nothing
- repair the surfaces of the current members
- replace the struts and walkways with steel members
- replace the struts and walkways with cast in place concrete members.

The selected alternative is to replace the struts and walkways with cast in place concrete members. This alternative provided economic savings and will extend the service of the dam beyond that of replacing the deteriorated members with steel.

The district will coordinate with all appropriate state and federal agencies to obtain the necessary licenses and permits for the project. The repair and rehabilitation can be completed with minimal disturbance to the surrounding area and without a coffer dam; so few licenses/permits should be required.

Project Management:

The district will contract with an engineer and construction company to complete the project. Administration of the project will be completed by GID personnel. Management will be provided by the GID Board of Commissioners, project manager, and an engineer. District staff will provide administrative support, bookkeeping, and recordkeeping.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$4,400	\$4,400
Professional & Technical	\$11,405	\$0	\$16,937	\$28,342
Construction	\$88,595	\$0	\$0	\$88,595
Total	\$100,000	\$0	\$21,337	\$121,337

The budget strategy provided in the application is reasonable. The alternative selected is the most economical and reasonable. The district will use in-kind resources to administer the project. The cost of the construction including construction administration will be paid for with grant funding. The total match funding for the project will be \$21,337.

The district has raised the assessment on each acre by \$2.50 to \$18.71- \$20.51 per acre, and the water fees have been raised \$1.50 per acre-foot to \$4.50 per acre-foot in support of this project

Benefit Assessment:

The major resource benefit of this project is preservation. The project is not providing new benefits, but is ensuring the future availability of present benefits and more efficient water use. The district also installed water-monitoring equipment last spring, so that all the releases are measured. The dam provides storage of runoff and return flows in the river system during the irrigation season. The capability to utilize these flows reduces the demand on stored water upstream.

The project will decrease long-term O&M costs to the district.

The project also provides fishermen with the opportunity to catch northern pike, walleye, sauger, and smallmouth bass. Paddlefish, a species of special concern in Montana, has also been documented to migrate upstream from the Missouri River to this point.

There were over 80 letters of support attached to the grant application.

Environmental Evaluation:

Environmental impacts associated with this project will be only short-term, such as dust and noise. The district will consult with all appropriate state and federal agencies to determine which, if any, permits are required for the rehabilitation of the project.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package. Any subsequent applications from Glasgow Irrigation District for the repair of Vandalia Dam will receive funding in the form of a loan and not a grant.

Project No. 39

Applicant Name	Ennis, Town of
Project Name	Phase II Wastewater Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 104,894 Pollution Control State Revolving Fund (PCSRF) Loan \$ 204,894 Treasure State Endowment Program (TSEP) Grant
Total Project Cost	\$ 409,788
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The town's wastewater treatment system was renovated in 1984 to meet the discharge requirements for secondary treatment. The project constructed two lined cells and a third unlined cell. Design was for an average flow of 100,000 gallons per day. As a result of growth, both in the year-round population and the tourist influx, the facility is operating at 110 percent to 180 percent of capacity. A Phase I construction project is scheduled for the summer of 2004 that will increase the capacity of the plant to 240,000 gallons per day, repair the leakage from existing ponds, and add an aeration system and a lift station.

A PER was completed in 2002 and an Amended PER was completed in April 2004 to address the technical issues with the wastewater system.

The proposed project - Phase II - solves three problems: 1) effluent disinfection, 2) increased outfall reliability, and 3) sludge disposal. DEQ has recently stated that a disinfection facility will need to be added to the treatment process to meet an updated permit for the facility. A new outfall is needed to increase the reliability of discharging during ice gorging conditions in the Madison River. Sludge must be removed from the existing wastewater treatment plant to meet the EPA biosolids disposal permit and Part 503 requirements.

An ultraviolet treatment facility will be installed to disinfect treatment plant effluent. A new outfall pipe will be installed that provides for a more reliable source of continuous discharge. Sludge will be removed from the existing system and applied on agricultural land for beneficial use.

Technical Assessment

Project Background

The Town of Ennis is located in southwestern Montana on U.S Highway 287. According to the 2000 Census, Ennis has a current population of 840. The town's existing wastewater treatment system consists of a three-cell facultative lagoon system that discharges into the Madison River. The lagoon system's influent flow rates have exceeded their design flow limit of 100,000 gallons per day. Current influent flows average 107,000 gallons per day in the winter and up to 180,000 gallons per day during the summer tourist season. The existing lagoons also appear to have a significant leakage problem. The proposed project consists of two phases of improvements. Design of the Phase I improvements is complete and construction is slated to begin this year. The Phase I improvements consist of the construction of a new aerated lagoon system and a new lagoon influent line. The proposed Phase I improvements will be designed to handle current and future flows and will resolve the current leakage problem. The Phase I improvements are not a part of the current application. The current application covers the proposed Phase II improvements.

The town recently received a new discharge permit for its lagoon system. The new discharge permit requires that the town disinfect its treated wastewater before it is discharged into the Madison River. The town does not currently disinfect the effluent from the existing lagoons. The existing gravity discharge line from the lagoons experiences plugging and freezing problems in the spring due to ice build-up in the Madison River. Sludge from the existing facultative lagoons will be removed as part of the Phase I improvements and stored in one of the existing cells after construction of the new aerated lagoon system is complete. The Phase II improvements covered by this application include construction of a new ultraviolet disinfection (UV) system, a new lagoon discharge line, and disposal of the sludge that was removed in Phase I.

Technical Approach

The PER evaluated all of the feasible alternatives for the disinfection system, lagoon discharge, and sludge disposal. Chlorination, ozone, ultraviolet disinfection, and the "no-action" alternative were evaluated as alternatives for disinfection. The UV system was selected because it is safe to use, cost effective, and does not create a pollutant that would be discharged into the river. The construction of a new outfall line and the "no-action" alternative were evaluated as alternatives for lagoon discharge. Treated effluent will be pumped through a new discharge line to the river after it is disinfected. Construction of the new pressurized outfall line should eliminate the plugging and freezing problems experienced by the existing gravity discharge line during spring icing conditions. Disposing of the sludge during the Phase I improvements by storing the sludge in Cell # 3 to allow drying and disposal in Phase II and the "no-action" alternative were evaluated as alternatives for sludge disposal. Removal of the sludge during Phase I and disposal during Phase II was selected to allow the sludge to dry before disposal. Dry sludge is much cheaper and easier to dispose of compared to sludge that is still in a liquid state.

An adequate detailed cost estimate was provided for each alternative. A present worth analysis was performed for each alternative. Documentation regarding the basis for the cost estimates was not provided in the PER; however, the costs appear to be accurate for a project of this nature. There was not a cost provided for the protection of the new outfall line for protective measures such as rip-rap, a concrete anchor pad, etc. Given the problems with the existing outfall, some type of protective measure seems warranted, however, the current budget should cover the cost. DEQ has given its approval to this alternative for sludge storage and disposal. The proposed UV disinfection facility and the new outfall line will be constructed within the floodplain of the Madison River according to documentation provided with the application. Permitting requirements and environmental impacts in regard to construction within the floodplain were not adequately discussed in the alternative analysis in the PER. The management plan in the application does discuss the permits that may be required.

The PER for the Phase II improvements consisted of an amendment to the original PER that was completed prior to the implementation of Phase I improvements. The amendment relied on outdated population estimates, but this oversight should not significantly affect the proposed Phase II improvements. It may mean that there is more groundwater infiltration into the collection than estimated in the original Phase I PER, which may warrant a more detailed infiltration/inflow analysis for the collection system. The proposed project includes a flow meter on the lagoon effluent, which will aid in the infiltration/inflow assessment.

The proposed implementation schedule is sufficient for the proposed project. Construction of the Phase II improvements will be completed during the 2005 construction season.

Project Management

For a project of its size, there is adequate staff proposed to manage the project. Town staff will be involved in most aspects of the project. The town's engineer will oversee the construction contract and will provide construction inspection services. Monthly construction progress meetings will be conducted by the project engineer and will be attended by the construction contractor, the engineer, and town staff. A number of public hearings have been held to obtain public input for both Phase I and Phase II improvements. Documentation for the hearings and public involvement has been included with the application. There have been newspaper articles discussing the project and the public hearings have been legally advertised.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$3,200	\$0	\$3,500	\$6,700
Professional & Technical	\$11,000	\$0	\$34,800	\$45,800
Construction	\$85,800	\$0	\$271,488	\$357,288
Total	\$100,000	\$0	\$309,788	\$409,788

The current proposed project is the second phase of a two-phase project. Phase I is slated for construction this summer. The Phase I budget included a \$500,000 CDBG grant and a \$1,800,000 PCSRF loan. Some-cost saving measures implemented in Phase I (including storing and drying the sludge removed from the existing lagoons) may mean that a portion of the PCSRF loan will not be expended during Phase I. The budget for the current Phase II improvements includes a \$204,894 TSEP grant, a \$100,000 RRGL grant, and a \$104,894 PCSRF loan. The budget narrative in the application states that if the cost-saving measures implemented in Phase I are successful, then the \$104,894 PCSRF loan will be covered with the original \$1.8 million PCSRF loan. The project budget appears to be complete and the financing plan is feasible. An average residential monthly user rate of \$33.87 is proposed which is reasonable and should be affordable for the community of Ennis. The project annual O&M costs include an increase in O&M to operate a new UV disinfection system. The O&M costs estimated for the community's new wastewater system are reasonable. The proposed plan for Phase II includes a TSEP grant, RRGL grant, and PCSRF loan to fund the proposed project. In the budget narrative the applicant states that if one or both of the grants are not awarded, the SRF loan amount will be increased as required to fund the project.

Benefit Assessment

The disinfection system will protect the water quality of the Madison River by killing any pathogens that may still be present in the lagoon effluent. The ability to continuously discharge effluent will eliminate the impact of discharging large volumes of wastewater over a short period of time into the Madison River. The installation of an effluent flow meter will help the town quantify the amount of groundwater infiltration that may be occurring into the sewer collection system. Disinfection of the wastewater discharge may improve the recreational use of the river near the wastewater treatment facility. The sludge removed from the existing lagoons will be beneficially applied to agricultural cropland. The sludge will act as a fertilizer and soil conditioner, temporarily increasing crop production.

Environmental Evaluation

A floodplain permit from Madison County, a COE 404 permit, and other permits may be required. The Environmental Checklist indicates that there will be no impact to the floodplain and that the floodplain will be restored to its original condition. Overall, the project will have long-term beneficial environmental impacts. Sludge from the existing lagoons will be disposed of in a beneficial manner and effluent from the new aerated lagoons will be disinfected prior to being discharged into the Madison River.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 40

Applicant Name Big Horn Conservation District
Project Name Critical Resource Assessment, Alluvial Aquifers of Northern Big Horn County

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 8,257	Applicant
	\$ 18,993	Montana Bureau of Mines and Geology
Total Project Cost	\$ 127,250	

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The purpose of this project is to collect the data needed to evaluate and manage the effects of drought and changes in irrigation practices and land use on ground-water quality and availability in northern Big Horn County. Residents of northern Big Horn County are dependent on ground water in river deposits (alluvial aquifer) as the primary if not the only source of water. This aquifer is recharged primarily by flood irrigation and ditch leakage. Decreases in recharge because of drought or changes in irrigation practices or land use can reduce groundwater availability. Additionally, the alluvial aquifer is shallow and vulnerable to contamination, but there has been almost no water-quality data collected in the area.

Groundwater information is lacking in the northern Big Horn River valley. There are no statewide monitor wells, no previous groundwater investigations, and no anticipated aquifer assessment by other programs in the foreseeable future. Obtaining this data will be essential for planning and management of this critical and increasingly scarce resource.

Proposed tasks for the project include conducting an inventory of wells, springs, and streams in the area. Samples will be collected for water-quality constituents and for hydrologic tracers. Dedicated test wells will be installed for measuring water-level fluctuations under different recharge scenarios and for conducting pumping tests for determining aquifer hydraulic properties. Soil moisture probes will be installed to evaluate irrigation percolation rates. Products of the project will include detailed maps of aquifer distribution and groundwater availability, groundwater flow, drilling depths, groundwater quality, and nitrate concentrations. A report will be prepared describing the activities and conclusions of the project. All data will be available through the MBMG's Groundwater Information Center database. Public meetings will be held throughout the project to disseminate project information and to gain input and identify concerns.

Technical Assessment

The purpose of the project is to collect groundwater quality and flow data that will provide information useful to Big Horn County residents in counteracting the effects of drought, changes in irrigation practices, and increased land use.

Project Background

All residents of northern Big Horn County depend upon an alluvial aquifer system in the Big Horn River valley as the primary source of groundwater while rural water users rely solely on the alluvial aquifer. This aquifer is recharged by flood irrigation and ditch leakage. The system is shallow and limited in vertical extent, which makes the quantity and quality of the water source vulnerable to the adverse affects of drought and agricultural land use practices.

According to the project sponsors, even though over 1,000 wells are currently in place in the Big Horn River Valley, there has been no systematic effort to collect hydrogeologic data necessary to understand water supply options for the area. Data such as groundwater availability, water level fluctuations, water quality, and groundwater/surface water interactions are needed. A groundwater investigation, such as that proposed for this project, would provide information that would assist the community in locating alternative water sources and better understand the flow and quality of the alluvial aquifer.

Technical Approach

The project goal is to collect data on the hydraulic and chemical characteristics of the alluvial aquifer and potential underlying aquifers. The applicant proposes to conduct an inventory of existing wells, springs and streams; install monitoring wells, collect samples for chemical analysis, and perform aquifer tests on selected existing wells and monitoring wells; develop estimates of irrigation percolation rates using soil moisture probes; and develop a report usable by interested members of the public and local governments.

The project plan includes the following tasks:

1. Inventory wells, springs, and surface water to collect hydrologic data
2. Install dedicated monitoring and test wells to collect additional aquifer data
3. Perform groundwater and surface water monitoring
4. Evaluate and interpret data
5. Disseminate project information to the public

The project is scheduled to allow approximately 21 months for data collection and well-installation and approximately 9 months to characterize groundwater and surface water in the area. In addition, the project includes public meetings and development of a project report throughout the period.

Two alternatives to the proposed project were presented in the application: 1) "no-action," and 2) seeking funds for the same project from other sources. An alternative to installing monitoring wells by sampling and testing additional existing wells was not explored. The preferred alternative was selected based upon the potential impacts to water supply if the project was not implemented and the lack of alternative sources of funding.

Project Management

The project would be managed cooperatively by Big Horn CD and MBMG. The project would be administered by Big Horn CD. The technical aspects of the project would be managed by MBMG.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$8,257	\$0	\$8,257	\$16,514
Professional & Technical	\$91,743	\$0	\$18,993	\$ 110,736
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$27,250	\$127,250

The budget appears to be sufficient and reasonable to fund the proposed project. The applicant provides a detailed breakdown of unit costs. Material, labor, and equipment costs used to develop the budget appear to be reasonable and adequate. No costs of the various alternatives are provided and reasonable alternatives are not explored.

Benefit Assessment:

The primary benefits to renewable resources are resource management and resource protection. The proposed project would result in measurable benefits of groundwater protection through better stewardship of the land, some quantification of the potential to impact surface water from agricultural practices, and a better understanding of the groundwater flow system of the local aquifer. The proposed investigation would likely

assist all residents in the assessment area by providing a database from which informed decisions could be made.

In addition, secondary benefits from the proposed project include resource conservation. The proposed project would result in measurable future renewable resource benefits through the protection of surface water and groundwater and could contribute to the enhancement of Montana's fisheries by providing information that could lead to reducing the discharge of nitrates to the Big Horn River. All the above benefits are relatively long-term, but no provisions are made in the project management plan to collect data after the two-year period.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. The beneficial results are primarily related to the collection of significant hydrogeologic data for use in making decisions about water supply and recharge sources. Minimal short-term construction related impacts (from installation of the monitoring equipment) should be expected.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 41

Applicant Name	Savage Irrigation District
Project Name	Savage Irrigation Rehabilitation Plan
Amount Requested	\$ 62,814 Grant
Other Funding Sources	\$ 4,600 Applicant (in-kind and fees)
Total Project Cost	\$ 67,414
Amount Recommended	\$ 62,814 Grant

Project Abstract (Prepared and submitted by applicant)

The Savage Irrigation Rehabilitation Plan is a project to investigate options and select a plan for rehabilitating the features of the Savage Irrigation District. Rehabilitation is necessary to reduce the consumption of electrical power used to elevate the district's water supply to its 2,300-acre irrigation development.

Reduction of power is necessary to accommodate a major change in the operation of the district. At the time this application is submitted, the district operates and maintains the USBR's Savage Unit. The district and the Bureau are engaged in a Congressional title transfer process that will result in the district owning the features. It is expected that the transfer will be authorized in 2004. A condition of transfer is that a transition period will be established to wean the district from receiving federal pumping power. Rehabilitation will reduce the consumption of higher priced power to an affordable level.

This project involves investigating options that would cut the consumption of water and power by 40 percent. The public carriage and distribution system constructed in 1949 is open and unlined. The district now requires about 8,000 acre-feet of water and 1,250,000 kilowatt-hours (kwh) of electricity to pump water to the main canal.

Options that will be considered include lining and piping existing waterways and establishing a closed system for flood or sprinkler irrigation. Restructuring farm units and utility and road re-routing will be considered.

This project will establish a program that will provide significant enhancement to Montana's renewable resources. Diversion from the Yellowstone River will be reduced by 3,200 acre-feet, and power consumption could be reduced by 500,000 kwh.

Technical Assessment

Project Background

The Savage Irrigation District is located along the Lower Yellowstone Valley about 25 miles northeast of Glendive. The district operates and maintains the federally constructed Savage Unit of the Pick-Sloan Missouri River Basin Program. The district currently has a long-term contract with USBR to perform these functions. This contract expires at the end of this year.

The district is currently engaged in a title transfer activity with USBR. Congress must authorize the change, and it is likely that the transfer will be authorized before the end of 2004. A contingency of the title transfer is a transition period where the district will be weaned from receiving federal pumping power from the Pick Sloan Program. Currently power is supplied to the district at less than 1 cent per kwh, which includes delivery of the power or wheeling. Other subsidized power is available, but rates would be substantially higher at 1.5 cents per kwh plus the additional cost of wheeling.

The district was constructed in 1949 and the distribution system is open and unlined. The system is plagued by high pump maintenance, seepage, and water shortage during high demand.

Technical Approach

The goal of this project is to produce a final design plan for rehabilitating the Savage Irrigation District that will reduce water and power consumption by 40 percent.

The objectives of the project include:

1. Determine existing off-farm delivery efficiency.
2. Determine existing on-farm efficiencies.
3. Determine best carriage and distribution system layout
4. Find consensus with landowners, utilities, and county authorities on new farm-unit layouts, facility relocations, and farm tract trades.
5. Conduct preliminary design and cost data on alternatives.
6. Produce a final design of the best alternative.
7. Prepare a final report.

This project will produce a plan that will reduce water consumption by at least 3,200 acre-feet and reduce the power consumption by 800,000 kwh.

Some of the options to be considered in this report are: lining and piping all of the district's 20 miles of main canal and laterals, installing a new pipe system using a modern layout for continuing flood irrigation, installing a new system using a modern layout for sprinkler irrigation, and revamping farm units to maximize use of center pivot irrigation.

The project is a planning and design project and short of the "no-action" alternative, there are no other alternatives. The "no-action" alternative would mean the district would not be able to function after the Pick Sloan power was discontinued.

Project Management

The district employs the Lower Yellowstone Irrigation Project Board of Control (LYIPBOC) to administer all district activities as directed by the district's board of commissioners. This arrangement is a requirement of the master contract between the district and USBR. The project manager, and LYIPBOC will oversee all tasks to be completed for the project. The commissioners of the Savage Irrigation District will review and approve budgets, and final plans pertaining to project activities. There will be no consultants involved in the project. The application states that the local news media will be informed of the project and its progress.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$15,806	\$0	\$4,600	\$20,406
Professional & Technical	\$39,055	\$0	\$0	\$39,055
Construction	\$7,953	\$0	\$0	\$7,953
Total	\$62,814	\$0	\$4,600	\$67,414

Project costs appear reasonable. The applicant is increasing the per acre assessment by \$2 to \$31 per acre, to provide matching funds of \$4,600 for this project.

The majority of this grant will pay for professional/technical costs, \$39,055. This portion of the project involves data collection, data tabulation and analyses, developing alternatives, comparing alternatives, and providing a design and report for the best alternative. The construction portion of the grant will pay for water measuring devices and soil moisture meters, at a cost of \$7,953. At first glance, the administrative costs seemed high for this type of project, but they include transportation costs. District boundaries are between 17 and 26 miles from the LYIPBOC headquarters at Sidney. The transportation costs were broken down for each task and totaled \$4,920.

Benefit Assessment

This project will conserve both water and energy resources. The district is purchasing water measuring devices and soil moisture measuring devices for collecting the data to use in its planning efforts. Planning will also allow the district to better manage its water resources so less water is pumped. Water left in the river will benefit fisheries.

Environmental Evaluation

This project will have no significant adverse impacts. If the project is constructed, there is a probability that wetlands will be affected. Mitigative efforts would address this impact.

Funding Recommendation

DNRC recommends grant funding of \$62,814 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 42

Applicant Name Butte-Silver Bow Department of Public Works, Water Utility Division
Project Name Big Hole River Transmission Line Replacement

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 67,526 Applicant (In-kind)
Total Project Cost \$ 167,526

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant.)

Construction began on the water system that serves Butte-Silver Bow in the late 1800s, by the Butte Water Company, a privately owned corporation. The Butte Water Company operated the system until Butte-Silver Bow purchased the physical assets in 1992. The assets were purchased to implement and ensure completion of improvements to the system. The U.S. Environmental Protection Agency and the Montana Department of Health and Environmental Science mandated the improvements by consent decree. Butte-Silver Bow ratepayers have invested over \$40 million in the past decade to restore and replace the drinking water system – a complex

infrastructure to import water from across the Continental Divide and from the mountain creeks surrounding Butte. These investments were unconditional and mandatory. There were no alternative sources to develop since the local groundwater is permanently damaged, and neglected improvements by the previous owner led to federal orders to upgrade the system.

This project proposes to replace a portion of the steel pipeline located between the Big Hole River and the Feeley Water Treatment Plant. The pipeline constructed in 1967 has sections that are severely deteriorated and have a high leak frequency. Cathodic protection installed in 1990 has not impacted the leak problem significantly due to the fact the original pipe installed was not coated or wrapped. This project proposes to replace approximately 1,100 feet of transmission line at an estimated cost of \$167,526.12. The project requests a \$100,000 grant, approximately 40 percent of construction costs, under the renewable resource program. The project will help conserve the stream resource, increase supply to the distribution system, reduce energy and chemical demands, reduce overall costs associated with the production and treatment of the source, and decrease health hazards.

Technical Assessment

Project Background

Since groundwater is unavailable for use by the community, Butte-Silver Bow is forced to rely upon a complex system of water collection, treatment, transmission, and distribution facilities to meet drinking water requirements.

The Big Hole River dam, pump station, and pipeline were originally constructed in 1899. The pipeline extends approximately 22 miles from the Big Hole River to Butte. In 1967, the original 24-inch wood lines were replaced with 36-inch steel pipe. The pipe was old or rejected thin walled steel, and there was no coating put on the outside of the pipe during original construction of the pipeline. This condition accelerated the deterioration of the pipeline along with the corrosive environment. Leakage occurs from the pipeline, caused by "pitting" on the outside of the bare steel pipe.

Until 1992 when it was transferred to public ownership, the Butte Water Company was a wholly owned subsidiary of The Anaconda Copper Mining Company (ACM). Improvements that normally would have been made over a period of many decades, and paid for by ratepayers over that period of time, were never made. Upon acquisition of the water system in 1992, Butte-Silver Bow immediately embarked upon an aggressive capital improvement program to repair restore and replace the 100-year old municipal system.

The Big Hole River supply is a critical component to Butte-Silver Bow's potable water supply system, supplying 62 percent of Butte's drinking water, and for the last few months it has been supplying 82 percent of Butte's potable water. It is also a source of Butte's fire protection water. Other sources of water include the South Fork of Divide Creek, Basin Creek, and the Moulton Supply, each of which is supplied by separate watersheds. The water system does not utilize any subsurface water sources.

Technical Approach

The goal of this project is to protect the health and safety of Butte-Silver Bow residents by providing safe, potable water to the community. The project objective includes replacing 1,100 feet of deteriorated water transmission main located between the Big Hole River and the Feeley Water Treatment Plant. The section of pipe identified has been repaired on a constant basis, continues to show leakage, and is deteriorated beyond repair. Replacement of a portion of the transmission line will reduce the leakage problem and conserve water.

The applicant considered three alternatives, including "no action" and replacement of the entire 22 miles of water transmission pipe. An alternatives comparison, based on costs and public health and safety risks and benefits, resulted in the selection of the proposed project to replace 1,100 feet of pipeline at an estimated cost of \$167,526. The project will replace an existing 36-inch steel pipe with 36-inch ductile iron pipe with poly wrap.

Staff at DEQ Public Water Section and SRF program agree that the water system is vital to the Butte-Silver Bow community. The proposed phased approach is technically valid. A 40-foot right-of-way easement exists along the 36-inch steel pipeline, and there is adequate room for equipment. The transmission line renewal

and the new pipe would be in conformance to the Montana Public Works Standard Specifications. The project construction schedule of one month is reasonable.

Project Management

Butte-Silver Bow Public Works, Water Utility Division, will administer all aspects of the proposed project and appear to be well qualified for this task. The proposed project management plan identifies adequate and capable staff to successfully administer and manage the project from planning through completion and closeout. Construction will be completed by Butte-Silver Bow Water Utility crews. The project management plan outlined daily meetings with the crew to discuss project development and meetings between the operation manager and oversight engineer (all on staff at the Butte-Silver Bow Water Utility Division)

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$1,560	\$1,560
Professional & Technical	\$0	\$0	\$19,865	\$19,865
Construction	\$100,000	\$0	\$46,102	\$146,102
Total	\$100,000	\$0	\$67,527	\$167,527

The water system provides water to 18,000 to 22,000 users in the Butte-Silver Bow community. The Big Hole River Transmission Line Replacement project is financially feasible. The cost estimates were clearly documented, and appear reasonable. Butte-Silver Bow matching funds are committed and available for use. The matching funds will be provided from revenues of the public water system. The current residential water rates average \$45.78 per month. An increase in monthly water rates will not be necessary. O&M costs will not increase. RRGL funds will be used to finance the construction of the water transmission line.

If the proposed funding package is not obtained, the applicant will be required to raise monthly water rates, which are among the highest in the state.

Benefit Assessment

This project will preserve a highly important and beneficial source of water for Butte-Silver Bow. The proposed project is being carried out to preserve Butte's drinking water system. Butte-Silver Bow Water Utility Department acquires 100 percent of its drinking water by treating surface water. Replacement of the deteriorating portion of the water line will reduce the leakage problem and help conserve and preserve water that Butte-Silver Bow can't afford to lose. Butte-Silver Bow is also striving toward city-wide metering for maximum water conservation. Existing customers are encouraged to participate in the metering program. New connections are required to meter hookups.

Public support was solicited through ads in the Montana Standard Newspaper. Written letters of support were included from Butte-Silver Bow Office of Council of Commissioners, Tax increment Financing Industrial Districts, and Community Development Department.

Environmental Evaluation

No long-term adverse environmental impacts are anticipated. The applicant suggests that environmental impacts would only be beneficial, in that leakage from the pipe can cause erosion and damage to the adjacent landowners' property.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 43

Applicant Name	Whitefish, City of
Project Name	Water System Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 357,500 Drinking Water State Revolving Fund (DWSRF) Loan
	\$ 457,500 Treasure State Endowment Program (TSEP) Grant
Total Project Cost	\$ 915,000
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant.)

The City of Whitefish's water distribution system is comprised of over 40 miles of water main, two storage tanks, many valves, fire hydrants, and approximately 2,854 water service connections. Source water comes from Haskell Basin/Creek and is augmented with water from Whitefish Lake during the high water demand months. The raw water is treated at the city's new water treatment plant which went online in October of 2000. Separating the City of Whitefish north to south is an extensive railroad yard with 13 sets of tracks at its widest area. The distribution system connects the south portions of Whitefish with the north portion with only two major water transmission mains. The majority of the population base lies south of the railroad tracks, relying on only two transmission mains.

The main problem with the Whitefish water distribution system is that only two mains connect the north portion of the city, including the water plant, with the south portion of the community. The majority of the water demand (80 percent) occurs in the south portion of Whitefish and relies solely on two very old, unlined undersized water mains that lie under the railroad yard. While one of the railroad crossings was upgraded by slip lining the old carrier pipe, the remaining larger main continues to be a serious problem. Maintenance of the old main is severely restricted by the difficult access to the pipeline within the rail yard. When the 12-inch line is out of service, water modeling indicates that negative pressures occur at several points within the distribution when a high demand such as a fire flow is imposed. Additionally, much of the anticipated growth within the periphery of the city will rely on this water main to provide additional flow in the future.

The city has utilized consulting engineers to evaluate the problem and identify the most cost-effective and environmentally sound solution. The recommended improvements from this investigation were to pursue additional crossing across the railroad yard to improve the viability of the distribution system. The preferred alternative is replace the old Texas Avenue watermain with approximately 650 feet of new 18-inch main, including 350 feet installed by microtunneling to cross beneath several active railroad tracks.

Technical Assessment

Project Background

The project is located in Whitefish an incorporated community in the north-central part of Flathead County. The City of Whitefish has an existing water collection, treatment, distribution, and storage system. The existing water distribution system is comprised of over 40 miles of water main, two storage tanks, many valves, fire hydrants, and approximately 2,850 water service connections. Source water comes from Haskell Basin/Creek and is augmented with water from Whitefish Lake during the high water demand months. The raw water is treated at the city's new water treatment plant, which went online in October of 2000. Separating the City of Whitefish north to south is an extensive railroad yard with 13 sets of tracks at its widest area. The distribution system connects the south portions of Whitefish with the north portion with only two major water transmission mains. The majority of the city's population base lies south of the railroad tracks and is relying on two transmission mains.

The two transmission mains both cross the railroad yard and are located on Texas Avenue and O'Brien Avenue. The original 12-inch crossing at O'Brien Avenue was installed between 1910 and 1920 without casing piping and consists of cast iron piping. In 1980, this crossing developed leaks that started to soften and undermine sections of the railroad tracks and subsequently was valved off for several years. In 1982, this crossing was TV inspected, and an 8-inch PVC slip line pipe was installed in the host 12-inch pipe. The

water main crossing at Texas Avenue has a similar history. It was installed in the same time frame and exists as 12-inch uncased pipe. Through the years there have been several pipe failures; fortunately all were located between railroad track sections and could be repaired without having to pull tracks. During repairs of this line, approximately 80 percent of the population must rely on a single transmission main, which limits supply capacity and available fire flow. Although not fully documented in the application, petroleum contamination in the railyard threatens the water system.

Technical Approach

The project goal is to eliminate total reliance on the existing old transmission mains. Several alternatives, including "no-action," were considered to achieve the project goal. The alternatives were compared in a matrix that included cost, performance, reliability, environmental impacts, and other considerations. The PER included a justification for the basis for selecting the preferred alternative. The preferred alternative consists of replacement of the old Texas Avenue water main with approximately 650 lineal feet of new 18-inch main, including 350 lineal feet installed by microtunneling to cross beneath several active railroad tracks.

Project Management

The city staff, who are proposed to administer the proposed project, are professionals working in the engineering, project management, administration, and law fields who have managed similar projects in the past. The city has successfully administered previous grants and loans for various public utilities. The city expects to procure the services of an engineering firm for design and construction administration in the near future. The city may also seek to hire a consultant to assist in administering the funding programs, as it has done in the past.

The project management plan provides for thorough and well-organized public involvement. In addition to regularly scheduled city commission meetings, the city intends to hold routine public meetings in order to educate/inform the public about status.

The project management plan provides for thorough and well-organized contract management with regulatory and funding agencies, consultants, contractors, and other involved parties.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$70,000	\$70,000
Professional & Technical	\$0	\$0	\$122,000	\$122,000
Construction	\$100,000	\$0	\$623,000	\$723,000
Total	\$100,000	\$0	\$815,000	\$915,000

The project budget is complete and includes adequate detail to show that the proposed budget is sufficient to complete the proposed project. The applicant has applied for a TSEP grant in the amount of \$457,500, and plans to obtain SRF loan funding in the amount of \$357,500 for the remainder of the project budget.

The applicant is a local government and has the ability to collect charges for debt and operation. Current residential charges for water service are \$29.52 per month. The projected residential rate is \$30.25 per month, and will affect 2,529 households. This will result in a residential utility bill (water and sewer) of \$57.77, which exceeds the target rate by \$0.78.

Cost estimates were provided for the options considered for each of the project components and were used to help determine preferred alternatives. Engineering costs are within the typical range for a project of this magnitude.

Benefit Assessment

The proposed project will improve the utilization efficiency of source water supplied to the City of Whitefish by replacing a waterline that has a documented leakage problem. The replacement of the identified line will

provide the city with improved management of the water supply by eliminating the need for staff to perform routine and major repairs to the existing main, which, under current conditions, results in a significantly depleted water capacity to the majority of the service area. Currently, when repairs are made to the existing aging transmission main, nearly 80 percent of the community is limited in its water supply and fire flows. It will also reduce the potential for loss of service of the railway, which would be a significant management problem for the city. The proposed project will preserve a water system that has been in existence for nearly a century. Replacement of the Texas Avenue water main loop will eliminate the potential for contamination of the water system, thereby preserving the existing quality of a renewable resource. Letters submitted with the grant application substantiate public involvement and support for the project.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly evaluated and no apparent adverse long-term impacts will result. Short-term construction-related impacts will be controlled through permitting and proper construction methodology including traffic control.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 44

Applicant Name	Circle, Town of		
Project Name	Wastewater System Improvements		
Amount Requested	\$	100,000	Grant
Other Funding Sources	\$	21,000	Applicant
	\$	500,000	Community Development Block Grant (CDBG)
	\$	500,000	Treasure State Endowment Program (TSEP) Grant
	\$	99,150	USDA Rural Development (RD) Grant
	\$	354,000	USDA RD Loan
Total Project Cost	\$	1,574,150	
Amount Recommended	\$	100,000	

Project Abstract (Prepared and submitted by applicant)

DEQ completed a compliance inspection for the Town of Circle wastewater treatment facility. Improvement to the lift station and sewer lagoon will help ensure that leakage from the lift stations and lagoon and possible contamination of the Redwater River will be eliminated.

The lagoon is discharged once a year. The analysis completed by Interstate Engineering and discussed in the PER shows that the lagoon appears to leak in excess of the 6 inches allowed per year. The difference between the allowed and the calculated gallons is great enough that they have recommended that a liner be put into the new system. Leaking and erosion of the dikes are creating an unsafe condition at the lagoon.

The existing two-cell facultative discharge lagoon was built in 1954 and underwent minor piping improvements in 1983. The dikes around the cells are badly eroded and the town has tried to stabilize them with large blocks of concrete, old pipe, tires, and miscellaneous debris. The soils in the Circle area are highly erodible, and the type of riprap used by the town has not worked effectively.

The conditions of the lagoon dikes are such that a failure could occur and would allow an uncontrolled discharge of untreated wastewater to occur. This would degrade the receiving waters and areas downstream. The conditions of the lift stations could also lead to sudden failure and would allow untreated sewage to back into homes.

DEQ has recommended that the town seek funding to upgrade the system and is in support of this project.

Technical Assessment

Project Background

The Town of Circle is located in central eastern Montana and is the county seat of McCone County. The 278 households in Circle are served by both public water and wastewater systems. While the town has committed substantial resources to its water system, the public wastewater system has not seen a major improvement since it was constructed in 1954. The public wastewater system consists of collection sewers, two lift stations and a two-cell lagoon. The lagoon has historically been operated as a periodic discharge facility with release only once per year. The DEQ Permit Section expressed concern about the lack of adequate operational control of the facility in accordance with permit requirements. In January of 2004, the Town of Circle received a violation letter from the DEQ because it exceeded a discharge limit in its Montana Pollutant Discharge Elimination System (MPDES) permit. An inspection in the fall of 2002 by DEQ cited problems with suspected lagoon leakage, dike erosion, and weed growth, and recommended that a facility plan be completed. In addition to the problems with the lagoon, the town recognizes that the two lift stations are aged and need to be brought up to current standards. The town hired an engineer to prepare a PER in order to analyze alternatives for upgrading its public wastewater system.

A thorough investigation of the collection system was not completed as part of the PER. Some problems with sewer mains were noted, but an overall analysis was not made. According to the PER, the town plans to address its collection system problems under its capital improvements plan (CIP). The CIP indicates that \$50,000 will be spent in FY04 on sewer main replacement.

The Town of Circle is awaiting a decision as to whether a coal-fired power plant will be locating in the area. The proposed improvements are sized on the basis of 1,100 people, with the assumption that the nearby development will be realized. Without the new development, the 2024 design population is only 701 people. While the proposed design will be adequate for a population of either 701 or 1,100 people, a smaller and lower cost facility could be provided if a design population of 701 was assumed.

Technical Approach

The town has chosen to address its lift station and wastewater treatment deficiencies at this time. For the lift station alternatives, consideration was given to various combinations of lift station rehabilitation and replacement for the two lift stations. Backup power is not proposed for the lift stations, and the engineer has indicated that power outages have not been a major problem in the Town of Circle. The chosen alternative, replacement of the main lift station and rehabilitation of the 3rd Avenue lift station, should adequately address deficiencies, assuming that the integrity of the 3rd Avenue wet well is adequate to survive the 20-year planning period and if the reason for the occasional plugging of this lift station can be determined and addressed in the design (the town's CIP mentions that the plugging should be looked into during the improvements). According to the engineer, adequate area does not exist for replacement of the 3rd Avenue lift station, yet this option was considered in the alternative analysis as a feasible solution. The PER does not provide information on the integrity of the 1,390 feet of 8-inch force main to the lagoon.

Replacement of the lagoon system will resolve problems with the eroding and inadequately maintained dikes and control any leakage that has been occurring. The initial screening looked at five alternatives: rehabilitation of the lagoons, a three-cell facultative lagoon system, an aerated lagoon system, a mechanical treatment process, and a total retention system. A mechanical system was dropped from further consideration due to cost and complexity of operation. Inadequate land area is the reason that a total retention lagoon was dropped from further consideration. An alternative that was not considered was a facultative or aerated lagoon with spray irrigation of effluent. The engineer indicates that this was not considered because the local area and soils are not conducive to spray irrigation. This alternative was not considered in the PER's alternative screening analysis.

The selected alternative is a three-cell facultative lagoon system, which is expected to provide better treatment than the current lagoon system and produce an effluent meeting MPDES permit requirements. However, better operation of the lagoon system in controlling the discharge is probably also necessary to assure that MPDES permit limits are met. Disinfection requirements, and possibly ammonia limits, may be

set in the final MPDES permit. The engineer has indicated that the proposed lagoon will allow for installation of chlorination equipment and other improvements to meet stricter MPDES requirements, should the need arise. This information was not provided in the PER.

Project Management

The project management narrative provided by the Town of Circle is brief, but it does identify adequate staff to manage the project. There is no detail on the responsibilities of each staff member or explanation of what level of coordination will occur. Monthly progress meetings are proposed for the wastewater construction project. Information on the construction project and requests for public input will be published in the newspaper and in posted notices.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$4,800	\$0	\$25,500	\$30,300
Professional & Technical	\$15,000	\$0	\$79,000	\$94,000
Construction	\$80,200	\$0	\$1,369,650	\$1,449,850
Total	\$100,000	\$0	\$1,474,150	\$1,574,150

The proposed project for the 644 residents of Circle is estimated to cost \$1,574,150 and is to be financed with grants from the CDBG, DNRC, USDA RD, and TSEP, and a loan from USDA RD. The probability of receiving an RD grant is unclear since the current Circle sewer rate is either \$7.57 or \$11.15, well below what the RD Program considers a reasonably high rate. If RD funding is not utilized, it is unclear whether the project is considered financially feasible to the community.

The current Circle sewer rate is either \$7.57 or \$11.15, and the proposed rate is either \$12.37 or \$17.50, as provided in the Uniform Application and the Preliminary Engineering Report, respectively. When added to the average monthly water rate, the combined water and sewer rate for the Town of Circle exceeds the target rate.

Unit price cost breakdowns were provided for all lift station and lagoon alternatives. Costs seem appropriate and consistent with those on recent Montana projects.

Benefit Assessment

The new lagoon improvements will allow for better management of groundwater and surface water resources. Conversion to a three-cell lagoon facultative lagoon system should result in a higher-quality effluent discharging into the Redwater River. Leakage from the lagoon is suspected, but has not been sufficiently quantified. Lining of the new lagoon cells will protect underlying groundwater. The existing wastewater system will be preserved for future use because of the proposed project.

Circle wants to be capable of providing the necessary sewer service to handle the additional growth should it occur. Nine letters in support of the proposed project were included in the application, including ones from the McCone County Commissioners, Mid-Rivers Telephone Cooperative, and the McCone Conservation District.

Environmental Evaluation

Environmental consequences were discussed in the Preliminary Engineering Report for the proposed project, with the exception of the effects of sludge removal and disposal, which can be a significant and costly issue. However, the engineer indicates that he has had no trouble with sludge disposal in any other eastern Montana projects, where the biosolids are in demand by area ranchers.

Since the proposed project occurs in previously disturbed areas (two lift stations and the lagoon), and sludge disposal must meet the requirements of EPA's Part 503 Biosolids Rule, no significant long-term impacts are expected to occur. The negative environmental impacts will be short-term and related to construction

activities – excessive dust, noise, vehicle exhaust, and fumes. The overall, long-term impact of the project will be a benefit to the environment and the community.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 45

Applicant Name	Black Eagle Water and Sewer District		
Project Name	Water System Improvements		
Amount Requested	\$ 50,000	Grant	
Other Funding Sources	\$ 99,500	Applicant	
	<u>\$ 149,500</u>	Treasure State Endowment Program (TSEP)	Grant
Total Project Cost	\$ 299,000		
Amount Recommended	\$ 50,000	Grant	

Project Abstract

The Black Eagle Water and Sewer District contracts with the City of Great Falls to provide its domestic water supply. The district owns and maintains Black Eagle’s water distribution system, but is not responsible for any water storage or treatment systems. The water distribution system consists of a wide variety of ages of water mains, valves, fire hydrants, and services. The system serves a community of approximately 914 people. It currently has 482 total water and sewer service accounts, of which 425 are residential, 47 are commercial, and 10 are inactive. However, local groundwater conditions have impacted the water distribution system. Many blocks of the water distribution mains are original cast iron piping. Cast iron pipe historically has proven to corrode in the clay type soils that make up Black Eagle. These water main breaks, which have been frequent in recent years, lead to associated health and safety problems.

The system has several problems including:

- below standard valving and looping;
- aged and deteriorating mains and services; and,
- substandard piping materials

As a result of these problems, Black Eagle needs to replace several blocks of its water system to meet modern construction standards. Black Eagle would have difficulty financing these improvements without assistance because of the low-income levels of the majority of Black Eagle citizens. Black Eagle residents already pay within \$1.80 of the Combined Target Rate.

Technical Assessment

Project Background

Black Eagle is a community of approximately 914 people that borders Great Falls on the west and north and the Missouri River on the south. The Black Eagle Water District was formed by special election in 1982. The district owns, operates, and maintains its own water distribution system. The district contracts with the City of Great Falls for supply, storage, and treatment of water for its distribution system. Currently, the district pays the city an average of \$100,000 per year for water supply. The relationship between the city and the district is mutually beneficial.

The district is responsible for over 26,000 lineal feet of 4-, 6-, and 8-inch water distribution mains in Black Eagle. The district assumed ownership of these mains from Anaconda Minerals Company in 1982. The mains range in age from over 80 years to less than 1 year.

Technical Approach

The goal of the project is to replace the original cast iron piping in the system that is subject to occasional failures due to corrosion. The performance of the water distribution system was evaluated relative to criteria including historical performance, structural integrity, capacity, and operational flexibility. Several alternatives were evaluated including variations on the extent of mains to be replaced, replacing undersized piping, ways to improve operational flexibility, and "no action". The alternatives were compared in a matrix that included cost, operational issues, construction problems, environmental impacts, and other considerations. The PER included a justification for the basis for selecting the preferred alternative. The preferred alternative is to replace all remaining corrosion susceptible water mains in a two-phase program. The first phase would replace approximately 2,000 lineal feet of water main. The second phase would replace approximately 2,900 lineal feet of water main.

Project Management

The proposed project involves several agencies, and the district has hired a project administrator to manage the project from start to finish. The administrator will be responsible for keeping each funding agency informed of project progress. The project management plan outlines the duties for the project administrator, engineer, district treasurer, and the district's chief elected official. This provides for a good staff of specialists to perform duties important to the project within their areas of expertise.

The project management plan makes no reference to any public involvement with the project.

The project management plan provides for thorough and well-organized contract management with regulatory and funding agencies, consultants, contractors, and other involved parties.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$2,000	\$0	\$10,000	\$12,000
Professional & Technical	\$5,000	\$0	\$41,000	\$46,000
Construction	\$43,000	\$0	\$198,000	\$241,000
Total	\$50,000	\$0	\$249,000	\$299,000

The project budget is complete and includes adequate detail to show that the proposed budget is sufficient to complete the proposed project. The proposed funding scenario includes grant funding from the Treasure State Endowment Program (\$149,500) and RRGL (\$50,000). The proposed grant funding comprises 67 percent of the estimated project cost. The rest of the project will be funded with district reserves. The grant funds are awarded on a competitive basis with consideration given for project need, technical design, etc. The TSEP program has indicated that the district did not submit its TSEP application in time and therefore will not be receiving funding. Therefore, it is probable that the project will not be funded in its entirety, and phasing of the proposed project is not discussed.

The application included an analysis of operational costs and user costs. The proposed rate of \$22.25, when added to the existing wastewater rate of \$16.50, results in a combined rate of \$38.75, which is \$1.84 below the combined target rate of \$40.59 or the community.

Cost estimates were provided for the options considered for each of the project components and were used to help determine preferred alternatives. Engineering costs are within the typical range for a project of this magnitude.

Benefit Assessment

Replacement of the aging and failing distribution system will provide conservation benefits by improving the utilization efficiency of a renewable resource. Management benefits will be realized by improving the district's ability to control and administer a renewable resource. The proposed project will also keep the system in service and preserve the renewable resource benefits that exist today.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly evaluated and no apparent adverse long-term impacts will result. Short-term construction-related impacts will be controlled through permitting and proper construction methodology including traffic control.

Funding Recommendation

DNRC recommends grant funding of \$50,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 46

Applicant Name	Lewis & Clark Conservation District	
Project Name	Nilan Irrigation Protection Project	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 3,600	Applicant
	\$ 31,200	Nilan Water Users
	\$ 10,440	Sun River Watershed Group
Total Project Cost	\$ 145,240	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

Nilan Water Users is a state owned irrigation project in the upper Sun River Watershed that distributes water to approximately 10,000 acres on 58 farms between the Rocky Mountain Front and Augusta. The irrigation project has been plagued with costly repairs and still has an infrastructure that has significant water loss compounded by many years of drought. Of primary concern is the 16-mile Florence Canal, which loses 10,000 acre-feet of the water per year, or 50 percent of the water removed from the inflows to the project.

This project will address the worst problems on a very leaky Florence Canal. This work will protect irrigation in a small community dependent upon a healthy agriculture economy. Specifically, the project will replace five failing canal structures, line 750 feet of the worst canal seeps, spray 5,750 feet of canal with a canal seal-it, and establish a monitoring program to document changes. These improvements will protect the health of the irrigation project, provide economic stability in the valley, and allow farmers to better handle the ongoing drought.

Technical Assessment

Project Background

The Nilan Irrigation Project, located in the Sun River watershed, serves a total of about 10,000 acres on 58 small farms. The project was completed in 1951 as a state-owned water project and is operated by the Nilan Water Users Association. The 16-mile Florence Canal is a part of the Nilan Irrigation Project that serves about 2,000 acres on 5 farms. It is estimated that the Florence Canal experiences water losses of 50 percent, which equates to about 10,000 acre-feet per year.

An assessment of the Nilan and Florence canals completed in 2003 identified several areas of the irrigation canal systems in need of attention, including leaking stretches of canal and aging canal structures. The proposed irrigation protection project was developed based on the options presented in the assessment report.

Technical Approach

The goals of this project are to conserve water, improve irrigation efficiency, reduce loss of land from saline seeps created by canal leakage, and improve water quality and quantity in Sun River tributaries. These goals are to be achieved by accomplishing the following objectives:

- Line 750 feet of the canal where seepage is worst.
- Spray canal seal-it on 5,750 feet of the canal where seepage is less severe.
- Replace 5 aging canal structures.
- Monitor water quality and quantity to measure results of actions.

The 2003 canal assessment report identified several options for improving canal efficiency. The preferred alternative was developed by choosing components from among these options with the intent of addressing the worst problems and gaining the most efficiency for the available budget.

The selected alternative appears to be appropriate and reasonable, but it is not clear from the application whether the selected alternative is the most cost effective or optimal combination of actions. It is also not clear from the application that an adequate level of technical expertise will be available to ensure proper installation of the canal structures; however, DNRC staff have indicated that they can provide some technical guidance.

Project Management

The applicant, Lewis & Clark Conservation District, is functioning as the fiscal agent for the Nilan Water Users Association on this grant application. The Nilan Water Users will provide in-kind labor, equipment, and project administration. The Sun River Watershed Coordinator will provide coordination among all parties involved.

Coordination among the parties appears to require relatively high administrative costs, but these costs are not unreasonable. It is not clear how the in-kind labor and equipment for construction will be managed on a day-to-day basis, but this type of in-kind work arrangement is not atypical for irrigation groups. The applicant indicated that it would be using this project to accomplish the stated objectives as well as build in-house expertise to conduct similar work in the future with less outside help.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$6,000	\$0	\$11,100	\$17,100
Professional & Technical	\$0	\$0	\$9,140	\$9,140
Construction	\$94,000	\$0	\$25,000	\$119,000
Total	\$100,000	\$0	\$45,000	\$145,240

The budget strategy provided in the application indicates some redundancy in administrative costs, but appears to be reasonable given the level of coordination required. No additional fees will be assessed by the Nilan Water Users to cover project expenses. The Nilan Water Users are currently in debt from a past emergency dam repair and have no reserve funds. All matching contributions are in the form of in-kind labor, equipment, and administrative time and expenses.

Cost estimates used in preparing the application were derived from the 2003 canal assessment report. The costs appear to be reasonable; however, the report indicated that these costs were only very preliminary.

Benefit Assessment

The main benefits of the proposed project are water conservation by eliminating or reducing canal leakage and infrastructure preservation by replacing aging canal structures. Secondary benefits include a reduction of saline seeps, improved water quality in Sun River tributaries by reducing soil erosion and salinity, and improved system management by improving efficiency and reducing long-term O&M. Statements and letters indicate public support for the project.

Environmental Evaluation

Environmental impacts associated with this project were only briefly evaluated but no apparent adverse long-term impacts will result. The beneficial results are primarily related to reduction in soil erosion and saline seeps.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 47

Applicant Name	Sweet Grass Conservation District (SGCD)		
Project Name	Middle Glaston Reservoir Feasibility Study		
Amount Requested	\$ 85,000	Grant	
Other Funding Sources	\$ 2,000	Applicant (In-kind)	
	<u>\$ 7,000</u>	Landowner Contribution	
Total Project Cost	\$ 94,000		
Amount Recommended	\$ 85,000	Grant	

Project Abstract (Prepared and submitted by applicant)

Recent extended drought has reminded water users of the importance of storage to irrigation. A water resource consulting firm was contacted by a group of water users regarding the potential for off stream storage of floodwaters. This water would be released later to supplement Sweet Grass Creek late season diversions. The general area of interest for storage was in the small drainage to the northeast of the Lower Glaston Reservoir, draining to Sweet Grass Creek. After a cursory study, the concept has progressed to the point of needing a preliminary plan and engineering cost estimate for three alternative sites. Two options for filling this proposed off-stream reservoir will be investigated. Many twists and turns are expected with a project of this size and this study will help to address them.

Work tasks include:

- Information Gathering and Coordination
- Task 2 – Montana Environmental Policy Act/National Environmental Policy Act Compliance
- Task 3 - Field Investigations
- Task 4 - Hydrology and Hydraulics
- Task 5 - Conceptual Design Task 6 - Final Report/Cost Estimate

The following goals are presented:

- develop at least 1,500 acre-feet of yield from the reservoir, 8 years out of 10;
- construct a safe dam with 100,000 to 150,000 cubic yards of embankment, less than 50 feet high;
- develop a win-win situation for the landowner, Glaston Reservoir water users, and Sweet Grass water users;

- make water available to all interested parties on an equitable basis, both upstream (exchange) and downstream; and
- address the expected concerns and questions associated with a project of this magnitude.

This project is unique in that very few feasible off-stream reservoir sites remain in Montana after nearly 150 years of development. The landowner and the Sweet Grass Reservoir Canal and Reservoir Company are receptive to the project and are open to negotiation as to utilizing the existing facilities. Sweet Grass Creek itself will benefit from additional in-stream flow in low-flow periods. Most of the local citizens are supportive of this project.

Technical Assessment

Project Background

This grant application is to fund an engineering study that will determine the feasibility of constructing a new dam and off-stream storage reservoir 14 miles north of Big Timber, in Sweet Grass County. If constructed, the new dam would provide storage for approximately 1,500 acre-feet of water to augment late-summer flows in Sweet Grass Creek, a much contested and seasonally dewatered stream that is tributary to the Yellowstone River. The general area for the reservoir would most likely be in a drainage lying northeast of Lower Glaston Reservoir, draining to Sweet Grass Creek. If constructed, the reservoir would provide benefits not only to irrigators, but would also provide recreational benefits and would help to reduce the low flows and high water temperatures that are detrimental to Sweet Grass Creek as a trout fishery during most summers.

This project is to conduct a preliminary engineering study, or feasibility study, to evaluate the feasibility of the new dam and storage reservoir. Technical issues, a financial analysis, and environmental impacts will be identified, and preliminary cost estimates will be developed for each of the three sites under consideration.

Technical Approach

The project goal is to conduct a study to determine the feasibility of a new dam and reservoir. The resulting project, if constructed, would store spring runoff for late-season releases to Sweet Grass Creek north of Big Timber. The reservoir would be located adjacent to existing Lower and Upper Glaston reservoirs. These facilities have historically provided late-summer flows to Otter Creek, leaving the Sweet Grass Creek drainage seriously dewatered most years.

The goals of the study are to determine:

- 1) Technical feasibility;
- 2) Financial feasibility; and
- 3) Environmental Impacts associated with the construction of Middle Glaston Dam.

If constructed, the dam and reservoir would be operated to:

- Develop 1,500 acre-feet of usable storage eight years out of ten; and
- Enhance not only irrigation benefits but also preserve fish and wildlife habitat within the Sweet Grass Creek drainage each year.

Specific tasks to be conducted during the study include:

- 1) Gather existing information from state and federal agencies and facilitate public meetings to introduce and discuss the potential project;
- 2) Conduct a preliminary environmental investigation to determine the extent of environmental impacts in accordance with the Montana Environmental Policy Act and the National Environmental Policy Act;
- 3) Collect field data including a geotechnical investigation for the sites being considered for construction;
- 4) Conduct a surface hydrologic study for the potential drainage area(s); and
- 5) Develop a conceptual design and cost estimate for the project, including land acquisition.

Project Management

SGCD will be responsible for the administrative management of the study being proposed in this application. Only one grant is involved, and administrative management will be minimal. It will be necessary for the district to select and contract with an engineering consultant to conduct the study through the statutorily required qualifications-based selection process. Coordination among the various agencies that will be stakeholders in the project will also be necessary. These will potentially include not only DNRC, but also DFWP, MBMG, and NRCS. Local organizations and governments will also be involved during the course of the study and development of the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$5,000	\$0	\$4,000	\$9,000
Professional & Technical	\$80,000	\$0	\$5,000	\$85,000
Construction	\$0	\$0	\$0	\$0
Total	\$85,000	\$0	\$9,000	\$94,000

The budget strategy provided in the application is reasonable. Engineering costs are within the typical range for a study of this magnitude.

Upon completion of the study, funding will be used to acquire land and actually design, bid, and construct the dam. At this time, a loan/grant combination will probably be applied for. The loan component will be the responsibility of the governing entity for the project, probably an irrigation district. It is anticipated that the project may cost as much as \$1,850,000, resulting in acreage assessments as high as \$30 per acre.

Benefit Assessment

The proposed Middle Glaston Reservoir will provide multiple renewable resource benefits. The study to be funded with this grant will determine the feasibility of the project. If constructed, the project will provide off-stream storage for up to 1,500 acre-feet of spring runoff; this will then be used to augment late-season flows in Sweet Grass Creek. Not only will there be benefits to irrigators, the project will also enhance the Sweet Grass Creek fishery by reducing the effects of low flows and high water temperatures that the stream encounters nearly every summer.

The project is widely supported by the community, landowners, and local governments, both city and county.

Environmental Evaluation

Any adverse environmental impacts associated with this study will be minimal. The potential project that may be constructed as the result of the study will have many environmental impacts, nearly all of them beneficial. The land to be impacted by the new reservoir is primarily range land; although valuable as a resource, it is of less economic value than if it were cropland. In this semi-arid region, the preservation of stream flows this project will enhance is essential to provide late-season irrigation for the production of hay crops.

Potential environmental impacts will be investigated during the course of this study. In compliance with the Montana and National Environmental Policy Acts, an in-depth Environmental Assessment and most-probably an Environmental Impact Statement will be required prior to any construction, along with the required public review and numerous opportunities for comment.

Funding Recommendation

DNRC recommends grant funding of \$85,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 48

Applicant Name	City of Livingston	
Project Name	Livingston Flood Damage Reduction Feasibility Study	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 155,500	Applicant
	\$ 25,000	DNRC, Water Resources Division
	\$ 2,465	Other government agencies and private partners
	\$ 120,760	Park County
	\$ 403,725	U.S. Army Corps of Engineers (COE)
Total Project Cost	\$ 807,450	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The City of Livingston requests DNRC resource grant assistance in securing matching funding in the amount of \$100,000 to assist the city as project sponsor to finance a COE study to evaluate the flood problem and potential solutions for the Yellowstone River at Livingston, Montana, under the authority of Section 205 of the 1948 Flood Control Act, as amended. The City of Livingston has signed a letter of intent to cost share with COE on the proposed Section 205 Study to reduce public and private flooding related property damage within and adjacent to the City of Livingston (from south of Seibeck Island to approximately 1,000 feet below the highway bridge crossing the Yellowstone River along the state highway by the KPRK radio station) by identifying feasible flood damage reduction alternatives.

The preliminary flood plain and flood way maps for the Livingston area released in June of 2003, caused concern, because the model results generated placed a substantial portion of the city (approximately 250 houses) into the flood way. As the city understands, the model used in the preliminary assessment did not take into consideration the levee constructed by either the WPA or CCC in 1934 and which levee continues in place today. As the city further understands, the levee was not considered in the models because the levee either predates COE specifications for levees or the manner and material of the levee's construction is unknown. The work proposed herein will address this unknown and thereby define the position of the city within the floodway.

COE completed its preliminary assessment report in October 2003. The initial phase of the feasibility study, \$100,000.00, was fully federally funded. The preliminary assessment study of the Yellowstone at Livingston, has performed conceptual evaluation, design, and cost estimates for levee and floodwall structural alternatives and buyout/relocation and flood proofing non-structural alternatives. Of the alternatives screened, the levee and the floodwall alternatives show the greatest potential to be feasible with preliminary cost estimates of \$1.51 to \$2.00 million, respectively. Based on this information, the levee and floodwalls appear to be both economically feasible and technically sound solutions to reduce flood damages for the City of Livingston. As such, COE recommended that the study proceed into the cost-shared phase for a more thorough and detailed analysis of the flood problem and potential flood damage reduction efforts.

Technical Assessment

Project Background

Given the flood record in Livingston, it is likely that appreciable flood damages would occur if floodwaters either breach or overtop the existing levee system. Damaging floods could start somewhere between the 10- and 50-year flood events. There are numerous large trees growing on and adjacent to the existing levee. If any trees were to fall during a flood, the dislodged root ball could cause significant damage to the embankment and potentially lead to levee failure. Portions of the existing levee and/or ground surface provide a 100-year flood level of protection with the required 3-foot minimum freeboard. However, there are low areas where the existing levee does not have a 3-foot freeboard. The City of Livingston must resolve issues surrounding the existing levee to maintain eligibility for the National Flood Insurance Program (NFIP). NFIP is the only source of affordable flood insurance for floodplain residents.

Technical Approach

The project is scheduled for completion within three years; this will allow local cost-share partners to spread their costs over three fiscal years. The proposed project will evaluate Yellowstone River flooding in the City of Livingston and adjacent Park County areas and analyze potential solutions to reduce flood damages. The study encompasses approximately 4 miles of river. COE will:

- Complete core borings and a geotechnical investigation of the existing levee and landfills;
- Update current hydraulic modeling;
- Determine the existing level of flood protection, land use economics, and damage estimates;
- Combine proposed flood damage reduction measures to develop potential alternatives;
- Develop preliminary designs of the alternatives;
- Prepare an economic and environmental evaluation of the potential alternatives;
- Identify the preferred alternative;
- Select the final alternative after holding a two-day public input meeting;
- Develop a design, cost estimate, real estate appraisal, economic evaluation, and environmental evaluation of the final alternative;
- Prepare a draft and final feasibility report; and
- Hold a public meeting on the final feasibility report.

Flood damage reduction alternatives to be further evaluated are:

1. Construct a new levee along the west side of Livingston Island;
2. Improve or replace the existing levee and construct floodwall along 1.9 miles of the river;
3. Divert a portion of the flow from the westernmost channel to the easternmost channel;
4. Elevate the existing structures in the floodplain;
5. Permanently evacuate the floodplain by relocating or demolishing structures; and
6. Restore and improve the historic side channel known as Fleshman's Creek along the west side of Livingston Island.

Preliminary analysis of alternatives shows number two, improving or replacing the existing levee and constructing floodwall, to be the most economically feasible alternative. State law prohibits the city from making changes to the existing levee because it is in the high hazard flood zone. Without a thorough feasibility study, taking into consideration cumulative effects of any flood reduction construction activities, flooding problems could be increased or shifted to other areas. There will be two critical junctures in the feasibility study process to determine need for the construction phase: 1) after completion of the levee core borings and geotechnical evaluation, and 2) after damage estimates are complete.

Project Management

The City of Livingston is evaluating hiring an assistant city manager and/or an engineering contractor to manage and coordinate the project. The city's project manager will be working closely with the COE project manager. In April 2004, COE completed a Project Management Plan for conducting the feasibility study, including a scope of work, project delivery team, schedule, quality control plan, risk analysis, cost estimate, and maintenance records. The city is establishing a local project team for advice and assistance. The Governor's Upper Yellowstone River Task Force made several recommendations concerning Livingston area floodplain issues. These recommendations should be taken into consideration when developing the final alternative.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$100,000	\$0	\$707,450	\$807,450
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$707,450	\$807,450

The population affected by this project is 1,500, including 250 households and 5 farms/ranches. The entire grant and all match funds will be used for the COE feasibility study. COE will be conducting the study, and a cost of \$70-100 per hour for fully burdened labor was used. Detailed costs estimates were given and are reasonable and adequate. The study will be cost shared 50-50 between the City of Livingston and COE; grant funding is needed for the city to meet the match requirement. To secure additional funds and in-kind contributions to meet the remainder of the required match, the city is currently working with the following interested parties: Montana Department of Transportation; Montana Department of Fish, Wildlife and Parks; Park Conservation District; Trout Unlimited; Yellowstone Conservation Forum; The Nature Conservancy; and Montana Rail Link. NFIP funds are available for buy-out options to remove structures from the floodplain.

Benefit Assessment

The applicant has demonstrated that there is an economic need for the project. Economic benefits would be realized by the new levee system protecting homes in Livingston. The applicant did not, however, demonstrate that Montana's renewable resources would benefit significantly from building the project.

Environmental Evaluation

There are no adverse environmental impacts associated with this final feasibility study.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 49

Applicant Name:	Liberty County Conservation District (CD)
Project Name:	Rediscovering the Marias – A Baseline Development Project
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 9,000 Applicant
	\$ 34,277 Montana Bureau of Mines and Geology (MBMG)
	<u>\$ 12,000</u> USDA Natural Resource Conservation Service (NRCS)
Total Project Cost	\$ 155,277
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Marias River has not undergone extensive study, as have many other Montana streams and rivers. It is now time to rediscover the Marias. More complete long-term baseline data needs to be gathered for the basin. The Marias River Watershed-Phase I, a 319 funded data compilation project, shows that the currently available data is either out of date or too incomplete to fully address river and watershed quality. It will also encourage local public buy-in and participation in watershed restoration.

In addition to collecting data for state and federal geographic information service (GIS) data servers, the development of a locally maintained database will provide the landowners and other stakeholders in the Marias River region with a focal point for current information. This locally maintained database could provide access to both historical data and the ability to input data to test the various "what if" scenarios for planning future projects.

From its headwaters at the intersection of Cut Bank Creek and Two Medicine River, the Marias River flows east through Toole County into Lake Elwell. From Lake Elwell, the Marias continues into the Missouri River just east of Loma. For monitoring purposes the Marias River has been separated into three separate segments: 1) the confluence of Two Medicine River and Cut Bank Creek to Lake Elwell, 2) Lake Elwell,

formed behind Tiber Dam, and 3) the Marias River below Tiber Dam to the mouth at the Missouri River. The listed impaired tributaries to the Marias and the reach above Tiber Dam are classified as B-2 waters.

The Marias River below Tiber Dam is classified as B-1. Resource problems in the watershed include stream bank stabilization, rangeland health, irrigation water management, noxious weeds, salinity, and oil and gas production/water quality. The Marias River watershed lies in the heart of the Golden Triangle and is predominantly dryland farming on uplands and some irrigated farmland along the major streams. Recreation has become increasingly important on the Marias River. The topography ranges from mountainous terrain (Glacier Park) on the west at the headwaters of Cut Bank Creek and Two-Medicine River, to gently rolling and generally level terrain, with elevations ranging from 9,552 to 2,580 feet above sea level.

Technical Assessment

Project Background

Long-term water quality monitoring is currently conducted at two U.S. Geologic Survey (USGS) stations on the Marias River. Since 2001, USBR has been collecting water quality samples and field parameters from Tiber Reservoir on the Marias. Data collected would assist USGS and DNRC in compiling a comprehensive database of water quality at these three stations. The Montana Salinity Control Program monitors the effects of its water quality improvement projects on salinity in surface and groundwater in the Marias watershed. DFWP, U.S. Fish and Wildlife Service (USFWS), and nine area CDs are developing a shallow groundwater assessment-mapping tool to prioritize best management practices (BMPs) for reducing groundwater effects on impaired streams in the watershed. Also, DFWP sporadically measures field parameters on the lower Marias River. The data gathered by the proposed project is intended to fill in the gaps of the current data gathering efforts to give a baseline assessment of the entire watershed.

Technical Approach

Two project alternatives are briefly mentioned: 1) conduct sporadic monitoring and assessments, and 2) monitoring planned and conducted by outside entities that have project priorities differing from the locally led Marias River Watershed group (MRW). The applicant does not include a "no-action" alternative. The selected alternative would establish baseline surface water quality, quantity, and stream conditions at approximately 15 locations on the Marias River and major tributaries. Over a three-year period, data would be gathered a minimum of four times a year. The chosen study parameters are:

- Sampling water quality;
- Testing field parameters;
- Measuring stream discharge;
- Evaluating streambed conditions;
- Documenting bank stability; and
- Documenting riparian vegetation conditions.

Specifically, data to be gathered would be discharge, pH, specific conductance, temperature, nitrate, turbidity, dissolved oxygen, orthophosphate, chloride, total suspended solids, total dissolved solids, major ions, trace elements, hydrogeomorphic assessment, stream habitat and riparian health documentation, noxious weed infestation, streambed and bank conditions, on-stream structure identification, and stream modification locations. Site visits would include water quality field sampling, discharge measurements, and photo documentation of site characterization and conditions. MBMG would prepare a report documenting monitoring and sampling methods, summarizing monitoring conditions, documenting water quality data, and interpreting collected data. Data would be analyzed to define the cause and sources of water quality degradation; differentiate and define point sources, nonpoint sources, and natural background conditions; and assess groundwater/surface water interaction. A watershed and water quality characteristics database, GIS database, and maps would be constructed. The database will be stored and maintained by the CD and MWR. The maps would show the location of assessment data points and other details recorded in the GIS. The project data would be assessed by the MRW Technical Assistance Committee, which is composed of representatives from CDs, MRW, Blackfeet Tribe, Rocky Boys Tribe, MBMG, DFWP, USFWS, BOR, NRCS, Montana State Extension Service, and local weed control boards.

The application did not give details on why each parameter to be investigated was selected, how human activities are currently affecting each parameter of concern, and how the investigation of each chosen parameter would be structured to determine the extent of impacts. If not already done by the technical assistance committee, conducting this initial evaluation before testing begins would help ensure the data gathered would contribute to achieving the intended project long-term goals and benefits. The applicant could also consider using grant funds to purchase some basic water measurement equipment for continued use by local participants, i.e.: salinity conductivity meters, temperature data loggers, and turbidity meters.

Project Management

The project management plan is sound and well described. With technical assistance from MBMG, Liberty County CD has successfully completed two previous grant projects, a groundwater study and water resource evaluation. Overall, project management is well organized, with a paid project coordinator and experienced project administrator. MRW has been meeting with local stakeholders as part of Phase I. They plan to continue these meetings and provide periodic progress reports. The project would also include a web site, media releases, and site tours. Including watershed irrigation districts and ditch companies as well as environmental, recreation, and sportsman groups could enhance MRW representation. Public input and outreach is well planned, but could also be improved by including the above groups. This would help ensure benefits to water quantity, water management, recreation, fish, and wildlife habitat is achieved.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$14,550	\$0	\$9,000	\$23,550
Professional & Technical	\$85,450	\$0	\$46,277	\$131,727
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$55,277	\$155,277

The watershed covers 3,294,259 acres and is 91.3 percent publicly owned. Matching funds appear to be secure. The budget was determined based on MWR's experience with other baseline water quality and quantity data projects. Costs appear to be reasonable. The applicant is charging \$14,500 for the coordinator's salary, additional CD facility expenses, and contract administration costs. The applicant does not break down this part of budget. The applicant mentions contract administration is based on percentage, but doesn't give the percent figure. Funding alternatives are not discussed. The applicant intends to continue the project after the initial three-year data gathering effort. The applicant does not discuss future funding sources. The applicant's states "future maintenance and operation costs will be determined after careful analysis of the collected data." Even though specific costs are not available, the applicant should demonstrate it has researched and identified potential sources for continued project funding.

Benefit Assessment

The data and information gathered would be used to determine the condition of the watershed. MRW and landowners would be provided with water quality and stream corridor assessment information that would provide tangible evidence of the need for large-scale participation in a watershed management plan. The active gathering of information in the watershed would generate interest in implementing BMPs throughout the watershed and create awareness of watershed conditions. Data would be produced needed to develop BMPs and to define priority areas and watershed restoration projects. The baseline data would allow for early warning detection of harmful water contamination. Using the data, cause-and-effect prediction models can be run to test the effectiveness of potential projects.

BMPs can include soil, water, and range conservation measures. BMPs to reduce agricultural chemical use may be developed. Accurate data could result in improved resource management decisions. Watershed restoration projects would develop healthy streams and riparian areas. Recreation, fisheries, and wildlife habitat would benefit from both BMPs and watershed restoration projects.

Environmental Evaluation

When selecting monitoring sites, the applicant plans to consider geologic hazards, hazardous wastes, unsafe working conditions, archeological significance, and aesthetics. Also, the applicant should sanitize wading and sampling gear between streams to reduce spread of whirling disease. Field vehicles should be cleaned between sites to reduce spread of noxious weeds.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 50

Applicant Name	Hammond Irrigation District	
Project Name	Porcupine Creek Siphon Rehabilitation	
Amount Requested	\$ 38,200	Grant
Other Funding Sources	<u>\$ 3,000</u>	Applicant
Total Project Cost	\$ 41,200	
Amount Recommended	\$ 38,200	Grant

Project Abstract (Prepared and submitted by applicant)

Project Description: This siphon was constructed in 1922 and is over 80 years old. The inlet and outlet transitions are constructed of concrete and the barrel may be constructed out of wood, concrete, or both. The siphon is a box, about five feet by five feet in size. It is relatively short with less than 100 feet of horizontal length from inlet gate to outlet transition. The available head loss across the siphon is about 2 feet. The siphon is beginning to leak, a precursor to failure. The uneven velocity distribution across the inlet and outlet indicates an unknown restriction in the barrel of the siphon, a partial failure. Head losses across the siphon are higher than expected.

Three alternatives were studied for rehabilitation of the siphon. The first alternative involves demolition of the existing structure and reconstructing out of concrete and concrete pipe. The second alternative involves passing floodwaters of Porcupine Creek under the canal and passing the canal over at least three large culverts. The third, preferred alternative, involve slip lining the existing barrel with high-density poly-ethylene (HDPE) pipe. Since this pipe has a considerably smoother wall, capacity is maintained with a smaller cross section.

The first two alternatives will have an expected field cost of \$60,000 to \$75,000. The preferred alternative will have a field cost of about \$37,000 to \$40,000. Should the siphon fail during a critical period, crop loss will easily exceed this value in one season. This loss directly affects tax revenues.

Technical Assessment

Project Background

The Hammond Irrigation District is located on the north side of the Yellowstone River, upstream of Forsyth, and serves a total of 4,013 acres over 32 farms. The Hammond irrigation canal carries approximately 43,000 gpm (96 cfs) of irrigation water. The Porcupine Creek Siphon allows this canal to pass under Porcupine Creek.

The siphon is over 80 years old. Field measurements indicate that the siphon is leaking 5 to 7 cfs and is likely restricting flow in its interior. Leakage and flow restriction indicate that partial failure of the siphon has occurred and total failure is imminent. Untimely failure of the siphon could lead to crop failure on the 2,650 acres of irrigated lands located downstream.

Technical Approach

The project goal is to rehabilitate the siphon before a catastrophic failure occurs and to extend its life another 100 years. A secondary goal is to conserve water that is currently leaking from the siphon. These goals are to be accomplished by lining the existing siphon with HDPE pipe.

The preferred alternative was selected over 1) demolition and reconstruction of the concrete siphon, and 2) demolition of the existing siphon and passing Porcupine Creek under the canal in three large culverts. It was assumed that all other factors (environmental impact, long-term O&M) would be the same for all three alternatives, so the preferred alternative was selected based solely on construction cost. Information was not presented to support this assumption.

The proposed alternative is innovative and, if it is successful, could provide a good example of a low-cost means of rehabilitating aging siphons across the state. Because it is an innovative approach, however, there is some concern about installation logistics, especially prior to inspection of the siphon interior. Presumably, the selected liner is appropriate for the conditions, but no information was provided to support the structural stability of the siphon/liner combination.

Project Management

The project will be managed by a district board member with assistance from the district secretary and the district's engineering consultants. The project is expected to take less than a week to complete; therefore project management should be minimal and within the capacity of the proposed management team.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$1,000	\$1,000
Professional & Technical	\$0	\$0	\$2,000	\$2,000
Construction	\$38,200	\$0	\$0	\$38,200
Total	\$38,200	\$0	\$3,000	\$41,200

The budget strategy provided in the application appears to be reasonable. The project was designed to keep costs to a minimum and affordable for the district. A total of 31 irrigators over 3,500 acres will be charged an additional fee of \$0.63 per acre per year for two years to raise funds for project expenses. Unit costs provided for the alternatives appear to be reasonable. Engineering costs for project design and implementation are very low but adequate for the project as proposed. Because this is an innovative approach, it is not clear whether the proposed budget would be sufficient if problems occur during installation of the slip lining.

Benefit Assessment

The main benefit of the proposed project is infrastructure preservation. Secondary benefits include water conservation by stopping leakage within the siphon and improved system management by increasing siphon efficiency and avoiding impending catastrophic failure. The application includes letters indicating good public support.

Environmental Evaluation

Environmental impacts associated with this project were addressed very minimally in the application, but no apparent adverse long-term impacts will likely result. The beneficial results are primarily related to avoided impacts that could result from siphon failure.

Funding Recommendation

DNRC recommends grant funding of \$38,200 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 51

Applicant Name	Bearcreek, Town of	
Project Name	Water System Improvements	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 249,787	Treasure State Endowment Program (TSEP) Grant
	<u>\$ 146,788</u>	USDA Rural Development (RD) Loan
Total Project Cost	\$ 496,575	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Town of Bearcreek receives its water supply from a spring located in the Beartooth Mountains with water rights to 500 gpm dating back to 1888. The water source has been used since 1930. The water storage tank and distribution system for the town were constructed in 1968. The last major improvements to the system were constructed in 1993. At that time, 4,000 feet of 4-inch water main from the intersection of Scotch Coulee and Highway 308 to the intersection point of the distribution system and the highway were replaced at a cost of \$180,000.

Water shortages over the past decade have resulted in water restrictions for water users. Some residents have also reported low pressure.

The Montana Department of Environmental Quality issued several notices to the Town of Bearcreek that coliform bacteria had been detected in the water supply.

The town's water system has the following deficiencies:

- insufficient storage capacity
- undersized supply line from the source
- undersized distribution lines
- inefficient chlorination system
- no water meters

The lack of adequate storage capacity and undersized supply line contribute to the water shortages experienced by residents. The current method of chlorination with pellets places the water supply at risk for contamination. The undersized lines and inadequate storage also result in low water pressures and a lack of fire protection.

The proposed project would involve the construction of a new 125,000-gallon water storage reservoir to provide additional storage capacity for the system. A gas chlorination system will replace the existing pellet system for more consistent treatment of the water supply. Water meters will be installed for the users on the system (currently 75).

Technical Assessment

Project Background

The Town of Bearcreek is a small, rural, mountain community located in Carbon County, 7 miles east of Red Lodge. Water supply for the town is from a spring located in the Beartooth Mountains with water rights to 500 gallons per minute dating back to 1888. The water source has been used since 1930. The water storage tank and distribution system for the town were constructed in 1968. The last major improvements to the system were constructed in 1993, when a portion of the transmission main from the tank to the distribution system was replaced.

The town's water system suffers from insufficient storage capacity, undersized supply line from the source, undersized distribution lines, inefficient chlorination system, and no water meters. The lack of adequate storage capacity and undersized supply line contribute to water shortages experienced by the residents. The current method of chlorination with pellets places the water supply at risk for contamination. The undersized lines and inadequate storage also result in low water pressures and lack of fire protection.

Technical Approach

The goals of the project include providing additional storage capacity to the system, updating the chlorination system and installing water meters to promote conservation and to improve the management of the system.

The goals will be met by construction of a new 125,000-gallon on-grade steel water tank and installation of a new gas chlorination system.

The alternatives analysis evaluated several different tank sizes and locations, along with different locations for the chlorination facilities. The PER included a justification for the basis for selecting the preferred alternative. The new water storage tank will allow the system to meet peak demands. The new gas chlorination system will provide a more consistent treatment of the water supply, and by locating the chlorination facilities below the tank, the current practice of discharging chlorinated water into Bearcreek can be eliminated.

The PER failed to address the potential Groundwater Under the Direct Influence of Surface Water classification of the current water supply.

Project Management

The proposed project involves several agencies, and the town intends to hire a project administrator to manage the project from start to finish. The administrator will be responsible for keeping each funding agency informed of project progress. The project management plan outlines the duties for the project administrator, engineer, attorney, bond counsel, town clerk, and mayor. This provides for a good staff of specialists to perform duties important to the project within their areas of expertise.

The project management plan makes no reference to any public involvement with the project.

The project management plan provides for thorough and well-organized contract management with regulatory and funding agencies, consultants, contractors, and other involved parties.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$2,340	\$0	\$25,260	\$27,600
Professional & Technical	\$10,472	\$0	\$89,805	\$100,277
Construction	\$87,188	\$0	\$281,510	\$368,698
Total	\$100,000	\$0	\$396,575	\$496,575

The project budget is complete and includes adequate detail to show that the proposed budget is sufficient to complete the proposed project. Adequate line-item budgets have been provided for administrative activities including legal costs, professional services, and bond costs.

The proposed funding scenario includes grant funding from the TSEP (\$249,787) and RRGL (\$100,000). The proposed grant funding comprises 70 percent of the estimated project cost. The rest of the project will be funded with a Rural Development loan.

The application included an analysis of operational costs and user costs. The proposed rate of \$33.15, when added to the existing wastewater rate of \$10.62, results in a combined rate of \$43.77, which is \$13.01 below the Montana Department of Commerce (DOC) recommended a combined target rate of \$56.78 for the community. TSEP confirmed that the proposed rate does not meet the target rate, and as a result, funding from the TSEP program is unlikely. Therefore, it is probable that the project will not be funded in its entirety, and phasing is not discussed.

Cost estimates were provided for the options considered for each of the project components and were used to help determine preferred alternatives. Engineering costs are within the typical range for a project of this magnitude.

Benefit Assessment

The installation of water meters will improve water use efficiency, which represents a conservation benefit. The installation of water meters will also improve the town's ability to manage the renewable resource. Eliminating the discharge of chlorinated water into Bear Creek will prevent a point source of pollution.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly evaluated and no apparent adverse long-term impacts will result. Short-term construction-related impacts will be controlled through permitting and proper construction methodology including traffic control.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 52

Applicant Name	Ryegate, Town of	
Project Name	Wastewater System Improvements	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 50,000	Local Resources
	\$ 394,081	Treasure State Endowment Program (TSEP) Grant
	<u>\$ 227,553</u>	USDA Rural Development (RD) Loan
Total Project Cost	\$ 771,634	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

Ryegate is located on the Musselshell River in central Montana. Ryegate's community wastewater system consists of sewage collection and treatment in a two-cell facultative lagoon. The sewer system and, in particular the treatment lagoons, have numerous deficiencies and no longer meet DEQ design criteria.

An engineering study was undertaken primarily to formulate potential solutions to mitigate suspected lagoon leakage and to identify any other wastewater system deficiencies, formulate potential solutions, and

recommend the best alternative to correct all system deficiencies.

Identified system deficiencies include significant lagoon leakage, insufficient capacity for DEQ-required wastewater detention times, poor influent and effluent piping configurations, regulatory and discharge permit concerns, and problems with the collection system.

The selected alternative is the construction of a new aerated lagoon system at the existing location, with direct effluent discharge to the Musselshell River. The estimated project cost is \$1,033,200. The approximate unit cost is \$3,855 per existing user and \$3,003 per design population user.

Technical Assessment

Project Background

Ryegate's wastewater treatment system was constructed in 1967 to replace pit privies, septic systems, and cesspools that were contaminating the groundwater that many residents used as their drinking water supply. The system has been operated over the past 37 years without a great deal of attention because there have been no noticeable system problems or MPDES permit violations. Measurements taken during recent inspections of the facility have indicated probable leakage from the lagoon. Also, there have been recent exceedences of the MPDES permit limitations, and severe odor problems during the spring and fall of the year. Finally, DEQ is considering more restrictive limitations for ammonia and possibly fecal coliform that the current system cannot meet. These problems have prompted the town to begin planning for improvements to the system.

The town's wastewater system consists of conventional gravity collection (mostly 8-inch diameter clay pipe) installed at minimum grades, 15 manholes of unknown condition, a package lift station serving 6 homes, and a 2-cell facultative lagoon with discharge to a slough that feeds the Musselshell River.

Technical Approach

The project goal is to provide the community with an upgraded wastewater treatment system that will ensure service for a 20-year period or longer. The main components of the project include:

- Construction of a new, 3-cell, partially-mixed, aerated treatment lagoon within the footprint of the existing treatment facility,
- Removal and disposal of accumulated sludges
- Construction of a lift station to convey treated wastewater directly to the Musselshell River

Several alternatives, including "no action," were considered for each of the project components. Preferred alternatives were selected based upon initial cost, performance, and present worth analyses. The applicant could have considered evaluating the alternative of constructing a new lagoon system on an adjacent site rather than in the existing facility in order to minimize adverse impacts to the surrounding wetland and to save costs.

The applicant also indicated that the project should include locating and uncovering the existing manholes in the collection system. However, no provisions for this are included in the project budget. Consequently, the condition of the collection system is largely ignored in the PER.

Project Management

The Town of Ryegate will be utilizing its own forces as well as those of a hired grant administrator to manage the project. The community is currently involved in a water system improvement project that utilizes similar funding sources, so there is a measure of experience already present with the management team for the upcoming sewer project. The project budget allows a considerable amount of funds for hiring a grant administrator who will handle the logistical requirements for communicating with and utilizing the various funding sources. Design and construction management will be performed by the consulting engineer, who will maintain a full-time resident inspector during project construction. Public involvement in the project has

been somewhat lacking with evidence of one public meeting. The applicant did not include a strategy for ongoing public involvement in order to achieve the ultimate goal of a debt election.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$4,150	\$0	\$42,950	\$47,100
Professional & Technical	\$10,000	\$0	\$89,592	\$99,592
Construction	\$85,850	\$0	\$539,092	\$624,942
Total	\$100,000	\$0	\$671,634	\$771,634

The budget strategy provided in the application is reasonable if TSEP agrees to fund 51.1 percent of the total project cost. TSEP typically requires a 50 percent match. Also, the budget for engineering design and construction management appears rather low, while grant administration is relatively high compared to other projects, with only three funding sources. The applicant is a local government and has the ability to collect charges for debt service, reserves, and operation. Current residential charges for sewer service are \$6.00 per month; the projected residential sewer rate is \$18.65 per month, and will affect 113 households. This will result in a combined residential rate (water and sewer) of \$46.50, which exceeds the "combined target rate" of \$45.28 by 2.7 percent.

Cost estimates were provided for the options considered for each of the project components and were used to help determine preferred alternatives. Engineering costs are rather low but within the typical range for a project of this magnitude. Some of the activity costs appear low, although they are presumably based on bid results and local knowledge of similar work in the Ryegate area.

The city is currently applying for TSEP and an RD loan and anticipates project construction during the 2006 season. The schedule appears reasonable and is based on the availability of funding.

Benefit Assessment

By reducing leakage from the lagoon, there will be a higher volume of better-treated wastewater being discharged to the Musselshell, increasing instream flows, which are severely depressed during drought years. Providing an enhanced treatment system will also reduce adverse impacts to the underlying groundwater aquifer. There may be some adverse impacts to the slough/wetland surrounding the current facility due to construction activities and re-direction of the effluent flow.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly evaluated and few apparent adverse long-term impacts will result. The beneficial results are primarily related to public health and environmental preservation. Included are reduced release of poorly treated wastewater to the groundwater and surface water ecosystem. There will also be a beneficial impact by reducing odors from the facility. The project will result in higher energy consumption than the current system through aeration and pumping needs.

Short-term construction impacts will be controlled through permitting and proper construction methodology including traffic control.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 53

Applicant Name	Sun Prairie Village Water and Sewer District		
Project Name	Water System Improvements		
Amount Requested	\$ 100,000	Grant	
Other Funding Sources	\$ 32,000	Applicant	
	\$ 741,000	Drinking Water State Revolving Fund (DWSRF) Loan	
	\$ 500,000	Treasure State Endowment Program (TSEP) Grant	
Total Project Cost	\$ 1,373,000		
Amount Recommended	\$ 100,000	Grant	

Project Abstract (Prepared and submitted by applicant)

The Sun Prairie Village County Water and Sewer District was created with 279 service connections in August 1989 as a result of problems with the community's wastewater system and water system. Today it has grown to approximately 484 connections, serving 1,363 people.

Currently, rates charged for water are on a flat rate basis. There is no method of encouraging conservation, monitoring demand, or determining line losses. The district experiences, on average, 4 to 6 leaks per year on the 1.5-mile production main with a cost of about \$2,500 annually to repair those leaks. The 8-inch main from the well field restricts the flow of water due to head loss and causes the pumps and motors in the wells to be over worked providing water to the community. In the event of extended periods of loss of electrical power to the community, the 85,000-gallon storage tank does not have sufficient capacity to provide domestic demand and adequate fire protection. Emergency power can restore pump capacity, but this is dependent upon a variety of uncertainties.

To address the need for equitable rates, conservation, and overall management of water production, the district proposes to install radio read meters. The existing 8-inch main will be replaced with a properly engineered and constructed 10-inch main. Increasing the capacity of the storage tank to 150,000 gallons would provide needed fire flow reserves and extend the available water in power loss events. It would also give the ability to manage the flows from and to the tank to allow better management of chlorine residuals in the northwestern portion of the district.

Technical Assessment

Project Background

Development of Sun Prairie Village began in the mid 1970s, including the installation of groundwater supply wells (near the Sun River to the south), storage, and a distribution system. The system is owned and operated by the Sun Prairie Village County Water & Sewer District. Over the past 10 years the district implemented a number of system improvements, including a disinfection/control building at the well field, additional supply wells, reservoir upgrades, and additional storage capacity.

The current Sun Prairie water system consists of four production wells with sand separators, a gas chlorination system, a 450,000-gallon concrete storage reservoir, a 85,000-gallon steel storage tank, a booster pump station, transmission mains from the well field and booster station, approximately 38,000 lineal feet of 8-inch PVC water main, and roughly 555 service lines.

According to the applicant's PER, the primary problems with the water system are the following:

- Supply Quantity is insufficient to meet current demands and water use restrictions have been imposed during high-use periods.
- Supply Quality is poor with high levels of dissolved solids and hardness. The water quality is a continual source of customer complaints.
- Storage volume needs to be increased in order to maintain service pressures during high-use periods.

- Transmission Main from the wellfield is undersized and restricts the pumping rate from the well field.
- Distribution system exhibits very low operating pressures due to inadequate elevation of the storage tank, undersized mains, and no looping.
- Lack of metering does not encourage water conservation and leaves the district without a way of equitably distributing system costs.

Technical Approach

The project goal is to provide the district with metering, additional gravity storage, and a new transmission main. The main components of the project include:

1. Install approximately 480 radio-read meters on individual water system users.
2. Increase volume of the existing 85,000-gallon steel tank to 187,000-gallon.
3. Replace the existing 8-inch (10,700 linear feet) transmission main with 10-inch main.

The applicant evaluated a number of alternatives, including "no action," three supply alternatives, three treatment alternatives, connection to the City of Great Falls system, three transmission main alternatives, five storage reservoir alternatives, and three metering alternatives. The project has been segregated into phases, with Phase I consisting of metering, transmission main replacement, and enhanced storage. Phase II anticipates a new treatment facility to remove TDS, while Phase III will include drilling a new well and upgrades to the existing 450,000-gallon storage reservoir.

Project Management

The district intends to utilize the services of a grant administrator to ensure that all necessary requirements for the funding programs will be met. The district has implemented projects in the past which have included public funding programs so the district president, general manager, and secretary have a considerable amount of experience upon which to draw. Final design and construction management will be performed by the consulting engineer who will have a full-time resident inspector on site during project construction. The district has conducted a user survey to ascertain the views on system needs from the customer's perspective.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$94,000	\$94,000
Professional & Technical	\$0	\$0	\$212,000	\$212,000
Construction	\$100,000	\$0	\$967,000	\$1,067,000
Total	\$100,000	\$0	\$1,273,000	\$1,373,000

The budget strategy provided in the application is reasonable. The applicant is a local government and has the ability to collect charges for debt and operation. Current residential charges for water service are \$32.40 per month. The projected residential rate is \$44.91 per month, and will affect 480 households. The projected average residential combined rate is \$74.51. This exceeds the "target rate" of \$73.05 by 1 percent

Cost estimates were provided for the options considered, although many of them were lump sum and lacked detail. Engineering costs appear rather high (22 percent of construction costs) for work of this nature (meters and laying pipe).

The district is contributing \$32,000 of its reserve funds and is currently applying for a TSEP grant (\$500,000) and an SRF loan (\$741,000) to cover the remaining project costs.

Benefit Assessment

The proposed project provides multiple renewable resource benefits, primarily related to the installation of well pump meters, individual water meters, and the larger transmission main. The meters will allow the district to better manage and conserve its groundwater resource by reducing wasteful consumption. The larger transmission main would likely result in energy savings by reducing pumping head.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. The beneficial results are primarily related to public health and safety issues. Virtually all of the work would take place in areas previously disturbed by construction.

Short-term construction related impacts will be controlled through permitting and proper construction methodology including traffic control.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 54

Applicant Name	Butte-Silver Bow Water Utility Division
Project Name	Butte-Silver Bow Water Utility Master Plan

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 11,170	Applicant
Total Project Cost	\$ 111,170	

Amount Recommended	\$ 100,000
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Project Abstract (Prepared and submitted by applicant)

Construction began on the water system that serves Butte-Silver Bow (BSB) in the late 1800s, by the Butte Water Company, a privately owned corporation. The Butte Water Company operated the system until BSB purchased the physical assets in 1992. BSB purchased the assets to implement and insure completion of improvements to the system. The U.S. Environmental Protection Agency and the Montana Department of Health and Environmental Science mandated the improvements by consent decree. BSB ratepayers have invested over \$40 million in the past decade to restore and replace its drinking water system – a complex infrastructure to import water from across the Continental Divide and from the mountain creeks surrounding Butte. These investments were unconditional and mandatory. There were no alternative sources to develop since the local groundwater is permanently damaged, and improvements neglected by the previous owner led to federal orders to upgrade the system.

BSB has constructed two filtration plants and a nine million gallon water storage reservoir, rehabilitated three pump stations, and replaced approximately 255,000 feet of transmission and distribution mains.

This project proposes to update the 1988 master plan. The master plan is in dire need of being updated to help BSB identify what work is still needed to update and improve the 100-year old municipal system. The proposed project is estimated at \$122,286.47. Since BSB will be funding through in-kind, the project requests a \$100,000.00 grant, which will be used for engineering services. BSB will fund approximately 18 percent of the estimated project cost.

Other agencies advised BSB that an updated master plan is needed to avoid jeopardizing future grant funding. We depend significantly on grant funding to make critical improvements to our system.

Technical Assessment

Project Background

BSB has a complex water system including three water sources, three separate water plants and pump stations, a large storage reservoir, and over 50,000 feet of water distribution mainline. It has been 17 years

since BSB has evaluated its water utility system and updated its master plan. The present master plan is completely outdated. BSB has currently committed \$1 million for critical water system improvements.

Technical Approach

The duration between water utility system evaluations is unique to each system and somewhat dependent on how many changes have been made to the system since the last evaluation and plan update. It is best if water system evaluations are ongoing. There are many variables in accessing the timing to update water utility master plans. Generally, a water utility master plan should be updated every 10 to 20 years. Ideally a plan should be updated every 10 years. A plan should go no more than 20 years before being updated. If few changes have been made to a system, then updating the plan every 20 years would be sufficient, however that is rarely the case. BSB has made major changes to its water system since the last plan was written in 1988.

The applicant proposes to complete this study in six months. The need for the study is warranted. The applicant wants to be proactive and update the study, which is prudent. Butte is overdue to evaluate its water system and update the master plan after 17 years. If nothing is done at this time, BSB would fall further behind in its evaluation and planning, and the water system could slip into a state of disrepair. The applicant does not discuss project alternatives in any detail.

Project Management

The BSB Water Utility Division will be responsible for contract and budget development, plan and specification review, project bidding, consultant selection, and payment processing. The county attorney will review all contracts. The applicant proposes to hire an engineering contractor to update the master plan. Contracting out this work is the best approach.

Two notices to inform the public of the proposed project were printed in the Montana Standard in May 2004. Contact information was given if the public had questions. No further public outreach plans were mentioned in the application.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$11,170	\$11,170
Professional & Technical	\$100,000	\$0	\$0	\$100,000
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$11,170	\$111,170

The applicant estimates that 30,000 to 32,000 residents, including 10,583 households, will be served by this project. The entire grant would be spent on engineering services. The applicant based this cost on information from engineering firms that have recently completed plans for cities comparable to the size of Butte. No breakdown is given for the engineer's costs, so it cannot be determined if costs are accurate and reasonable. The applicant is providing an in-kind match of \$11,170 for project administration; this is 11 percent of the total project cost.

At an average of \$66 per month in 2003, BSB residents paid one of the highest municipal water rates in Montana according to a Montana Department of Commerce survey of water facilities. A target rate is the amount that should be paid for water services based on median household income. The BSB target rate is an average of \$32 a month. Butte-Silver Bow residents are paying \$34 a month above target rate.

Without grant funds, the funding alternative for BSB is to charge residents for the plan cost. The applicant justifies the need for grant funding because residents are paying one of the highest rates in Montana. The cost for the water users to pay to update the plan is not that great. Without grant funds, the 10,583 households served would have to pay a one-time cost of \$9.45 for updating the plan, spread out over the six-month project period this cost would be \$1.58 per month. However, actual costs to households would be less because this estimate does not include commercial and public water users.

Benefit Assessment

BSB needs to update its plan to continue to receive grant funding for critical water system improvements. The master plan will identify needed water utility system improvements, which will help BSB to manage its water supply.

Environmental Evaluation

There are no adverse environmental impacts associated with this project.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 55

Applicant Name	DNRC - Montana Watercourse		
Project Name	Increasing Montana Water Management Capacity		
Amount Requested	\$ 99,714	Grant	
Other Funding Sources	\$ 1,750	Federal Work/Study Program	
	\$ 2,250	Workshop participant fees	
	\$ 21,304	Workshop speaker and advisory committee in-kind	
	<u>\$ 21,304</u>		
Total Project Cost	\$ 125,018		
Amount Recommended	\$ 99,714		

Project Abstract (Prepared and submitted by applicant)

As Montana grows and further develops its water resources through water use, increased well and septic installation, and further building in and use of sensitive areas, the potential for ill effects on the existing beneficial uses and the users grows. Many water management choices rest in the hands of individual landowners. Solutions to the management, conservation, and preservation of Montana's water resources and beneficial uses are largely non-regulatory in nature, which makes it critical for stakeholders to have the ability to make informed decisions regarding their watershed based on accurate information.

New owners and those who live on small acreage suburban and rural lots face particular barriers to acquiring information and knowledge about their potential roles in water management because they often do not have a complete understanding of the system of water rights, of water supply and groundwater issues, and full information about the implications of using and building in flood prone areas. Further, since most do not interact with traditional natural resource agencies and conservation districts, many outreach efforts are ineffective.

This proposal will improve water management capacity in Montana by developing and implementing a new approach to this group of landowners. DNRC proposes to conduct extensive realtor education and multi-media approaches designed to convey information to this target group of landowners, with the result of enhanced capacity to make water management decisions.

As a result of this project, it is expected that 115 realtors will be trained in these water resource topics, and that at least 4,000 landowners will gain access to print, Internet, radio, and in-person opportunities to enhance their capacity to manage water resources on their land.

Technical Assessment

Project Background

According to a recent Colorado State University study, the fastest growing areas of Montana are not urban or suburban but diverse places such as the Big Hole Valley, Lewistown area, and rural areas west of Billings. High Country News reports that, in the western U.S., the amount of land carved up by development rose from 20 million acres in 1970 to 42 million acres in 2000. The applicant observes that new residences in rural areas can mean:

- Improperly sited wells and septic systems;
- Poorly maintained wells and septic systems;
- Groundwater contamination through improper well maintenance, pumping, and application of fertilizers and pesticides;
- Illegal diversion of water rights;
- Ditch right-of-way problems;
- Noncompliance with water right transfers, changes, and other water right regulations;
- Aquifer level draw downs; and
- Building in hazardous floodplain areas.

Technical Approach

This project is a two-year education program for small acreage rural and suburban landowners, land developers, and realtors. Geographical project focus areas are generally identified as western Montana valleys and rural areas with increased ranch and farm turnover, subdividing, and out of town growth. These groups will be educated on water rights; floodplains; and well and septic system siting, management, and maintenance. The applicant anticipates training approximately 115 realtors and reaching approximately 4,000 landowners and developers through publications, radio, Internet, and personal contacts. Funds for this project would be used to:

1. Publish 500 handbooks 24 to 30 pages for realtors and land developers;
2. Publish 4,000 booklets 16 to 20 pages for small acreage landowners;
3. Develop two types of realtor workshops: one on water rights, artificial ponds, and water supply – the other on floodplains, groundwater, wells, and septic systems;
4. Implement six realtor workshops;
5. Set up a booth or give power point presentations at five realtor or land developer meetings or conferences;
6. Give presentations at five small acreage landowner venues;
7. Work with media on ten press releases;
8. Work with radio stations on two public service announcements; and
9. Maintain website for two years.

It is recommended that the applicant work closely with the Montana Association of Realtors, the Montana Building Industry Association, and the Montana Contractors Association.

Realtors are mainly interested in the relationship of water rights to property transactions. The association acknowledges the need for more realtor education in the water rights area. The association also supports the idea of a publication specifically on water rights that can be used by realtors to educate and distribute to landowners across the state. There are approximately 6,000 licensed realtors in Montana. To achieve results, the association recommends training 2,000 of the 6,000 realtors. Also, to increase water right ownership transfers, the association suggests educating closing and escrow agents to inform buyers and sellers of the transfer requirement.

Project Management

A Montana Watercourse staff person will spend 2,380 hours to carry out project coordination, outreach, and activities. A work/study employee hired for this project will spend 440 hours assisting the staff person. The Watercourse director will spend 120 hours on project management and the Watercourse office manager will

spend 60 hours on project administration. DNRC Water Management Division will provide accounting services.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$11,707	\$0	\$0	\$11,707
Professional & Technical	\$88,007	\$0	\$25,304	\$113,311
Construction	\$0	\$0	\$0	\$0
Total	\$99,714	\$0	\$25,304	\$125,018

Costs are \$87,064 for project operation and \$12,650 for publications, public service announcements, and registration fees. Cost estimates were based on the applicant's professional judgment of past expenses for similar projects or verbal estimates. The applicant states it will pursue grant funding for continuation of website maintenance, realtor classes, publication updates and distribution, and outreach.

Benefit Assessment

This project is primarily a management project. If implemented, it would have the potential of reaching 4,000 landowners and over 115 realtors. This project will help individual landowners understand the connections between choices they make regarding water and the effects this has on the whole watershed. The effect this project has on multiple use would be indirect, but important. Increased awareness and better management of water could result in lessened contamination of groundwater, better floodplain zoning, and conserve surface and groundwater, thus having the potential to enhance fisheries and wildlife habitat and recreation.

Environmental Evaluation

There are no adverse environmental impacts associated with this project.

Funding Recommendation

DNRC recommends grant funding of \$99,714 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 56

Applicant Name Milk River Irrigation Project Joint Board of Control
Project Name Lake Sherburne Dam Outlet Works Rehabilitation

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 5,750 Applicant (In-kind)
\$ 18,800 Water Users O&M Account
Total Project Cost \$ 124,550

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

For more than 90 years, the St. Mary Division of the Milk River Project has served to supplement the Milk River water supply. Augmentation of the Milk River water supply is vital to preserving the agricultural based economy of Montana's Hi-Line, providing municipal water, fish, wildlife, and recreation benefits along the Milk River.

The St. Mary Division was built by the U.S. Bureau of Reclamation (BOR) in the early 1900s to provide supplemental irrigation water along the Milk River, but over time has evolved into a multi-use project. The St.

Mary Division provides an important renewable resource to residents along the Milk River as it supplies water for 110,306 acres of the Milk River Irrigation Project, 9 municipalities, and the Bowdoin National Wildlife Refuge.

Using Renewable Resource Grant funds, the Milk River Project irrigation districts, in cooperation with DNRC and BOR, wish to rehabilitate the outlet works of one of the most important components of the St. Mary Division, Lake Sherburne Dam. The two concrete conduits downstream from the regulating gates have experienced significant deterioration over the last 40 years since they were repaired in the early 1960s. Deterioration has occurred due to several factors including freeze-thaw action, abrasive action, and cavitation. Rehabilitation of the outlet works will ensure the long-term viability of the outlet works and the dam, thus preserving the integrity of this critical water storage facility for Milk River water users for many years to come.

Technical Assessment

Project Background

Lake Sherburne Dam is located adjacent to Glacier National Park on Swiftcurrent Creek, a tributary to the Saint Mary River. The dam and reservoir are part of the Milk River Irrigation Project owned and operated by USBR. The reservoir is a major storage component for the Milk River Project that serves eight irrigation districts irrigating 110,306 acres, as well as nine municipalities and Bowdoin National Wildlife Refuge.

The concrete outlet works conduits that carry releases through the dam have deteriorated significantly since they were last repaired in the early 1960s. Deterioration has occurred due to freeze-thaw action, abrasion, and cavitation. The outlet was inspected and cleaned of debris in 2001. Sediment, stones, and rocks were removed from the outlet works structure and the approach channel. In addition, the trashrack, which prevents large rocks from passing through the outlet works, was rehabilitated. USBR has indicated that cleaning and inspection process will continue on a regular basis (every five years).

A separate project is planned to modify the outlet works structure to accommodate low-flow releases to support the threatened bull trout species in Swiftcurrent Creek. This modification will allow for winter low-flow releases without the associated cavitation damage that has been occurring in the existing system. The exact scope of that project was not yet established at the time of application for this grant.

The proposed project will remove deteriorated concrete from inside the outlet conduits and place new concrete to restore the original shape.

Technical Approach

The project goal is to preserve the dam for long-term use by restoring the concrete outlet works to its original condition. The main components of the project include:

1. Prepare specifications and bid the project;
2. Dewater the outlet works and install a cofferdam;
3. Remove unsound concrete;
4. Install epoxy anchors to tie the new concrete floor into the existing walls;
5. Place and cure new concrete; and
6. Remove the cofferdam and restore the outlet to operation.

The preferred alternative was presented as the only viable alternative.

The "no-action" alternative would allow continued deterioration to the point of failure of the dam and is not viable.

Evaluation of combining the proposed concrete repairs with the anticipated outlet modifications was not presented. A present worth analysis comparing potential alternatives was not presented.

Project Management

The Joint Board of Control and USBR manage the project. The management plan utilizes USBR for professional and technical activities, with the costs to be reimbursed by the water users. USBR costs were not included in the financial plan.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$5,750	\$5,750
Professional & Technical	\$0	\$0	\$0	\$0
Construction	\$100,000	\$0	\$18,800	\$118,800
Total	\$100,000	\$0	\$24,550	\$124,550

The budget strategy provided in the application does not include all the anticipated costs. The technical and professional costs will be paid out of existing O&M assessments. The construction costs did not include mobilization, dewatering, or the cofferdam costs. The construction cost estimate does not include a contingency for unanticipated costs. The application implies that the water users would be responsible to reimburse these costs, but they are not included in the analysis. Therefore, the total costs paid by the sponsor will be considerably higher than presented in the application. Current and proposed water users rates were not provided.

Benefit Assessment

The proposed project provides no new renewable resource benefits when compared to the existing situation. The primary benefit of this project is to maintain Lake Sherburne Dam as a viable component of the Milk River Irrigation Project. The benefits are the avoidance of adverse impacts associated with loss of this water supply. The loss of this supply would have tremendous adverse impacts to the Milk River basin.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. The project will improve safety considerations of the dam for the downstream public.

Short-term construction related impacts would be controlled through permitting and proper construction methodology.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 57

Applicant Name	Bigfork County Water and Sewer District	
Project Name	Wastewater Collection System Extension	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 129,100	Pollution Control State Revolving Fund (PCSRF) Loan
	\$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	\$ 729,100	
Amount Recommended	\$ 100,000	Grant

Mayport Harbor is a subdivision with approximately 21 developed lots located along Flathead River. Mayport Harbor was subdivided in 1972 in an area adjoining the Flathead River floodplain. The subdivision was created before the state adopted stringent regulations protecting groundwater and surface water. Existing water quality in this area has indicated elevated nitrate and phosphorous levels, a direct indication of poorly functioning septic systems. Most of the systems are more than 25 years old, and are at the end of their design life. Mayport Harbor was recently annexed into Bigfork with the intent of extending sewer service to replace the old, failing on-site septic system. This would eliminate a major non-point source of pollution to Flathead River and Flathead Lake. Flathead Lake is classified as A-1 for water quality, the highest in the state.

The proposed solution would replace all on-site septic systems and drainfields in Mayport Harbor with a new gravity sewer system and lift station, to connect and dispose the sewage to Bigfork's Advanced Wastewater Treatment Plant. This would eliminate the nitrogen and phosphorous flowing to Flathead River. The recommended improvements would cost \$626,900. The district would own, manage, and operate the new collection system. Bigfork is committed to providing service outside its current district boundaries, and has indicated they have capacity to service this existing development.

Technical Assessment

Project Background

The Bigfork County Water and Sewer District recently annexed an area known as Mayport Harbor, a subdivision located west of Eagle Bend Golf Course and near the Flathead River. The subdivision was developed in the early 1970s and is served by a small public water supply and individual wastewater disposal systems. The purpose of annexing this area was specifically to provide centralized wastewater collection by the district and elimination of the individual disposal systems. According to the PER, the Mayport Harbor area is subject to high groundwater and may be adversely affecting state waters through the release of inadequately treated wastewater.

There are currently 21 residences in Mayport Harbor, each of which has an individual wastewater treatment and disposal system.

According to the applicant's PER, the primary problems with Mayport Harbor's situation are the following:

- Groundwater is less than 4 feet below the drainfields, which is insufficient to provide adequate treatment before mixing.
- Non-degradation break-through calculations indicate that phosphorous from individual wastewater disposal systems will or may already be entering state waters. The applicant has perceived this as a violation of state regulations. (Note: ARM 17.30.701 regarding non-degradation was promulgated in 1994 – well after the systems in Mayport Harbor were installed)

Technical Approach

The project goal is to provide the Mayport Harbor residents with centralized wastewater collection and conveyance to the Bigfork District's wastewater treatment facility for proper treatment and disposal. The main components of the project include:

1. Install approximately 3,500 lineal feet of 8-inch gravity sewer main.
2. Install approximately 4,500 lineal feet of 4-inch gravity service pipe.
3. Construct a centralized lift station to pump wastewater to the District's trunk line.
4. Properly abandon the existing septic systems.

Several collection system alternatives, including "no action," were evaluated. A net present worth analysis was performed, but there appear to be flaws in the methodology and it is unclear whether the most cost-effective, long-term solution has been selected. Generally, the installation of conventional gravity collection is the industry standard and would resolve the problems associated with Mayport Harbor being unsewered.

Project Management

The district intends to utilize its district manager and the services of a grant administrator to ensure that all necessary requirements for the funding programs will be met. The district, with the involvement of its engineer and administrator, has implemented a number of projects in the past, which have included public funding programs, so the assembled team has a considerable amount of experience upon which to draw. Final design and construction management will be performed by the consulting engineer, who will have a full-time resident inspector on site during project construction. The district has entertained comment on Mayport Harbor at several of its regularly scheduled board meetings and there has not been a great deal of public involvement. Two letters of support have been received on the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$500	\$0	\$20,410	\$20,910
Professional & Technical	\$0	\$0	\$79,000	\$79,000
Construction	\$99,500	\$0	\$529,690	\$629,190
Total	\$100,000	\$0	\$629,100	\$729,100

The budget strategy provided in the application is reasonable if the TSEP program agrees to provide 69 percent of the project costs. TSEP typically requires a 50 percent match except in cases of extreme need and affordability problems. TSEP ordinarily limits funding to \$7,500 per benefited user. However, Bigfork has applied for \$23,810 per user. The applicant is a local government and has the ability to collect charges for debt and operation. Current residential charges for sewer service are \$0 since there is no service. The projected residential rate is \$49 per month, and will affect 21 households. The project rate exceeds the "target rate" of \$24.38 by 100 percent.

The district intends to fund the local share of the project through creation of an RSID within the boundaries of the WSD. This will require significant involvement by Flathead County (notices, ballots, assessments, collecting revenues, etc.). However, the applicant does not include a discussion of coordinating with the County to accomplish these tasks.

Cost estimates were provided for the options considered, although many of them appeared rather high and some items appearing in the estimates were not included in the alternative descriptions. Engineering costs appear reasonable. The applicant intends to hire an administrator to assist with managing the funding sources, but there is no budget item included.

The district is also applying for a \$129,000 PCSRF loan to cover the remaining project costs.

Benefit Assessment

The primary benefit of the proposed project is preservation through the elimination of 21 individual wastewater disposal systems near the banks of the Flathead River. The applicant estimates that 2,000,000 gallons per year of partially treated wastewater are currently being discharged to the groundwater system and, likely, to Flathead Lake. Studies have shown that Flathead Lake is experiencing accelerated eutrophication as a result of nutrient input. Consequently, removal of this source of nutrients would have a beneficial effect on the lake.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. The beneficial results are primarily related to preservation of the Flathead Lake resource by reducing nutrient discharges. Virtually all of the work would take place in areas previously disturbed by construction.

Short-term construction related impacts will be controlled through permitting and proper construction methodology, including traffic control.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 58

Applicant Name	Ruby Valley Conservation District		
Project Name	Phase I Implementation – Ruby Groundwater Management Plan		
Amount Requested	\$ 33,694	Grant	
Other Funding Sources	\$ 3,000	Applicant	
	\$ 8,600	Landowners/Consultant/DNRC	
Total Project Cost	\$ 45,294		
Amount Recommended	\$ 33,694	Grant	

Project Abstract (Prepared and submitted by applicant)

The purpose of this project is to follow up on recommendations made through the groundwater study completed in 2004. The Lower Ruby Valley Groundwater Management Plan identifies two issues that need to be addressed by the Ruby Watershed Council. These issues are elevated nitrate levels found in parts of the watershed and the negative impacts that large production wells will have on the groundwater system and surface water rights. Other issues are identified in the Groundwater Report and need to be addressed. However, they are not yet ready to propose for implementation.

This project would help agriculture producers implement best management practices (BMPs) in relation to fertilizing practices through the use of independent soil sampling. Elevated nitrate levels in groundwater near the East Bench indicate the source of nitrate elevation is most likely linked to irrigated farming practices. Data suggests nitrates in groundwater can have a residual effect for many years. Independent soil sampling would ensure BMPs are being followed and that the most economical use of nutrients is being applied.

In response to the long-lasting drought conditions in Montana, the use of large production wells to produce water for irrigation is being studied and in some cases implemented in the Ruby Valley. Part of this project would involve working with DNRC and local water right holders to explore the option of closing the basin to large production wells over 35 gpm. As outlined in the Lower Ruby Valley Groundwater Management Plan, data exist to correlate the relationship between groundwater and surface water; and there is concern that large production wells could affect surface water right users and river flow for the fishery.

The goal of this project is to work with local landowners and water right holders to ensure that BMPs are being utilized for nitrogen fertilizer applications and that steps are being taken to protect groundwater through the exploration of a basin closure to large production wells.

Technical Assessment

Project Background

Finalized in June 2004, the Lower Ruby Valley Groundwater Management Plan identified several issues that require further action, including 1) the potential for elevated nitrates in groundwater, and 2) implementation of a controlled groundwater area and basin closure study. The population of the Ruby Valley, which is estimated at 2,000 people, could benefit significantly from further understanding of the nitrate loading and groundwater withdrawal impacts in the basin.

Nutrient loading is the primary concern with the nitrate analysis project. According to the Groundwater Management Plan, areas with elevated concentrations of nitrates in groundwater have been identified in the East Bench, located southwest of Twin Bridges. The applicant states that the most likely source of nitrates in the groundwater on the East Bench is related to historic irrigated farmland fertilizer practices.

The closed basin study is being initiated based on the results of the Groundwater Study. Development of groundwater resources by ranchers and farmers is increasing. The Ruby River relies on recharge from groundwater to sustain surface water flows. Large production wells upstream could have a negative impact on water use and the current recharge process. Additionally, surface water rights could be adversely affected by large production wells pulling water from aquifers that recharge the Ruby River. The Ruby River is also a high quality fishery. Conflict between competing interests has resulted from current development.

Technical Approach

The project goals are to protect water quality and fisheries through the implementation of BMPs for fertilizer applications and water rights protection through the Basin Closure study. The project contains two independent tasks to meet these goals: 1) collect soil samples to assess fertilizer requirements, and 2) research the need for a closed basin.

The goal of soil testing is to help producers manage nitrogen fertilizer needs and applications as economically as possible. The Ruby Watershed Council is interested in helping producers practice implementation of BMPs relating to nitrogen application and water quality protection.

The goal in researching the basin closure is to 1) educate the landowners and water right holders regarding the process of petitioning for a basin closure, and 2) educate landowners to understand the potential effects of large production wells on water rights in the basin. Local input into the process for closing the basin to large groundwater development will be encouraged.

Several alternatives, including the "no-action" alternative, were considered for the project. The preferred alternative for the nitrate sampling was selected based upon the applicants' decision that sufficient and reliable data will be collected to allow for the implementation of BMPs as well as a cost-effective approach to reaching the goal of nitrogen management. The preferred alternative for the basin closure is to study the need to petition DNRC for basin closure and provide local input on protecting natural resources and the socioeconomic fabric of the Ruby Valley.

Project Management

The Ruby Valley Conservation District administrator will take the lead on project administration. Based upon previous DNRC-RRGL projects completed by the Ruby Valley Conservation District, the administrator is well-qualified to administer the project. The project manager will be responsible for establishing landowner involvement and partnership, scheduling meetings, soil sampling, and overall coordination of the project. The roles of the project manager are defined in the grant application and appear appropriate given the budget allocations and project approach. The project budget allows for funding to support the financial and administrative aspects of the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$3,219	\$0	\$0	\$3,219
Professional & Technical	\$30,475	\$0	\$11,600	\$42,075
Construction	\$0	\$0	\$0	\$0
Total	\$33,694	\$0	\$11,600	\$45,294

This budget appears to be sufficient and reasonable to fund the proposed project as identified in the grant application. However, support for all matching funds is not documented in the application.

Material, labor, and equipment costs used to develop the budget appear to be reasonable and adequate. No costs of the various alternatives are provided.

Benefit Assessment

The applicant states that significant renewable resource benefits will be realized by implementing Phase I – Ruby Groundwater Management Plan. Resource conservation and management will benefit through the use of fertilizer best management practices implementation on irrigated farmland. Resource preservation will benefit through the protection of water rights and water quality. Citizens will benefit from the potential to protect water rights and fisheries in the Ruby River. All the above benefits are relatively long term.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. The beneficial results of this proposal are primarily related to the collection of soil data for use in assessing fertilizer needs. Further development of a focused proposal will require further environmental evaluation.

Funding Recommendation

DNRC recommends grant funding of \$33,694 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 59

Applicant Name	Cartersville Irrigation District
Project Name	Sand Creek Siphon Rehabilitation Project

Amount Requested	\$ 100,000	Grant
	\$ 30,843	Loan
Other Funding Sources	<u>\$ 20,000</u>	Applicant
Total Project Cost	\$ 150,843	

Amount Recommended	\$ 100,000	Grant
	\$ 30,843	Loan

Project Abstract (Prepared and submitted by applicant)

The Cartersville Irrigation District is located on the north side of the Yellowstone River and extends from Forsyth to four miles east of Thurlow. The irrigation of this area was first proposed about 100 years ago with the idea of using diversions from an old slough in the river. In 1934, a diversion dam was constructed at Forsyth to divert water from the Yellowstone River, and has subsequently been re-covered with concrete twice. The Cartersville Irrigation District was created and constructed at the end of the "dirty Thirties" in response to the extended drought at that time.

The Sand Creek siphon has seen several maintenance efforts over the years, including repair of concrete damaged by freeze-thaw cycles, and replacement of the 60-inch diameter corrugated siphon sleeve at least once. Sandstone rip-rap has frequently been added over the siphon to armor the siphon due to the relatively shallow cover of the Sand Creek bed over the siphon. The district performs maintenance on the system, but advancing age and continual exposure to the elements places the proposed corrective measures beyond the scope of maintenance. The Sand Creek Siphon channel was severely eroded from a large flood occurring in the fall of 1987. The conduit was exposed as the channel degraded. Sandstone rock was placed over the pipe to offer some protection from future floods. The channel from the siphon to the Yellowstone River is unstable and eroding, probably partially in response to wastewater flows from the canal operations.

The solution is to excavate and remove the existing 72-inch corrugated metal pipe, lower the invert of siphon ditch by further excavation, bed and install (including fusion welding) a new 60-inch HDPE pipe, rework the

existing concrete headwalls to accommodate the new pipe, repair weathered concrete and gates, and install a thickened and broadened rip-rap mat in the invert of Sand Creek.

Technical Assessment

Project Background

The Cartersville Irrigation District is located in Rosebud County on the north side of the Yellowstone River, extending from Forsyth to 4 miles east of Thurlow. The district was built in the late 1930s and supplies water to 62 farms totaling 9,425 acres. Approximately one-third of the district's acres are located downstream from the Sand Creek Siphon.

The Sand Creek Siphon has been replaced at least once according to the district. Sand Creek Siphon is a 72-inch, 300-foot corrugated metal pipe under Sand Creek. The top of the siphon was exposed after a flood in 1987 due to channel erosion. Sandstone rip-rap was placed over the siphon to provide protection from future floods.

This project proposes to replace the 72-inch corrugated metal pipe, lower the siphon invert, replace it with a 60-inch HDPE pipe, refurbish the concrete headwalls and gates, and install a thicker and broader rip-rap mat over the new siphon for greater protection.

Technical Approach

The project goals, as stated in the application, are to restore the integrity of the conduit, provide protection from further streambed erosion, and ensure continued service to water users below the siphon.

Several alternatives were considered in the application. The preferred alternative was based on an engineering report that recommended that the siphon be replaced. The second alternative was to install a 60-inch HDPE slip lining in the siphon. The condition of the structure was never evaluated and has not been inspected since 1987, so integrity of the structure is unknown. Furthermore, installing slip lining does not address the exposure issue. The other alternative, a conduit carrying water over the channel, was the only other alternative evaluated. This was dismissed as cost prohibitive and prone to flood damage. Costs were developed only on the preferred alternative and little if any analysis on the alternatives was provided.

Project Management

There was no discussion on project management or contract management. It appears that the applicant does not understand the level of management necessary to administer the proposed project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$6,750	\$0	\$6,750
Professional & Technical	\$0	\$0	\$8,500	\$8,500
Construction	\$100,000	\$24,093	\$11,500	\$135,593
Total	\$100,000	\$30,843	\$20,000	\$150,843

The budget contains no provision for a project manager, details are omitted from the budget tables, and costs are not documented.

Based on the district's affordability data, long-term O&M costs would not be an issue.

Overall, the financial feasibility presentation is weak, lacking documentation and detailed costs.

Benefit Assessment

The proposed project would provide multiple renewable resource benefits. The 60-inch HDPE pipe has smooth walls, which would reduce friction losses in the siphon, thereby improving water deliveries to the lower end of the district. This could result in reduced spills into Sand Creek. The proposed project would have water management and conservation benefits. The project would also provide resource preservation benefits by ensuring a reliable water supply to the lower third of the district. Lowering the invert at Sand Creek would provide benefits for riparian health, which in turn benefits fish and wildlife.

There is significant written public support for this project.

Environmental Evaluation

The environmental impacts from this project would probably be short-term and easily mitigated. The narrative and checklist provided in the application were brief and lacking in detail.

Short-term construction related impacts were adequately discussed.

Funding Recommendation

DNRC recommends grant funding of \$100,000, and loan funding of \$30,843 upon development and approval of the final scope of work, administration, budget, and funding package.

The following projects, listed alphabetically, are not recommended to receive grant or loan funding.

Applicant Name	Blaine County Conservation District
Project Name	Dry Fork Dam Enhancement – Spillway Improvements

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 3,000	Applicant (In-kind)
	<u>\$ 90,000</u>	Landowner Participation
Total Project Cost	\$ 193,000	

Amount Recommended	\$ 0
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Project Abstract (Prepared and submitted by applicant)

The Dry Fork Enhancement Project is a cooperative effort between local, state and federal entities, private landowners and community members to establish a long-term sustainable fishery and recreational facility at the Dry Fork Dam, while irrigating approximately 1,500 acres of cropland in Blaine County. The Dry Fork Dam, which is located eight miles north of Chinook, is classified as a High Hazard Dam

The dam's High Hazard Operation Permit will expire on July 1, 2005. According to Terry Voeller, Dam Safety Section of DNRC, "DNRC require that spillway capacity for the dam be increased to convey, at the very least, the 500-year flood. We will not issue another operation permit for your dam if this is not completed". The dam in its current condition does not have adequate spillway capacity to satisfy the 500-year flood. According to a spillway design report prepared by Hydrometrics, Inc. of Helena, in order to comply with safety standards, the district proposes:

To construct an auxiliary spillway near the right abutment of the Dry Fork Dam. The additional spillway with appropriate runoff routing that combined with the existing spillway and discharge curve will level the dam crest to an allowable elevation. The spillway improvements will be designed to meet the state's dam safety criteria for spillway capacity.

The district is seeking grant assistance in the amount of \$100,000 to match the private commitment for spillway improvements to ensure continued operation of this dam for irrigation, stock and wildlife watering and recreation.

Technical Assessment

Project Background

The Dry Fork Dam Enhancement is a cooperative effort between various government agencies, private landowners, and community organizations to enhance the existing dam for recreation, fish and wildlife, and irrigation benefits. The existing dam is a privately owned, high hazard dam that needs additional spillway capacity to be in compliance with Montana Dam Safety Regulations. The dam is located approximately 8 miles north of Chinook. The dam was originally constructed in 1986. The project impounds 5,465 acre-feet of storage at the principal spillway crest (Elevation 2,485). The DNRC High Hazard Dam Operating Permit limited storage in 1995 to no more than 3,250 acre-feet (Elevation 2,477.5) due to inadequate spillway capacity. The current operating permit will expire on July 1, 2005, and DNRC has indicated that the permit will not be renewed without modifications to improve spillway capacity. The proposed plan was designed to bring the spillway capacity into full compliance with DNRC regulations. This would allow resumption of storage of the full 5,465 acre-feet.

The proposed project will excavate a new earthen auxiliary spillway near the right abutment capable of safely passing the 500-year flood event. The spillway improvement project is one component of the overall enhancement project. Other components will develop the reservoir for recreation use and fish and wildlife habitat. The overall enhancement project is not viable without the spillway improvement component.

Technical Approach

The project goal is to preserve the dam and increase the allowed storage by providing adequate spillway capacity. The main components of the project include:

1. Excavating an earthen spillway near the right abutment;
2. Installing a reinforced concrete retaining wall across the spillway exit to limit erosion; and
3. Filling low spots in the crest of the dam to provide a uniform top elevation at design level.

Several alternatives, including "no-action," were considered for this project. The preferred alternative was selected as the only viable alternative.

The "no-action" alternative would perpetuate the limited storage or lead to removal and abandonment of the dam. No action does not meet DNRC criteria for high hazard dams and is not viable.

Other spillway alternatives were considered but determined to be not viable because of cost or technical aspects. A present-worth analysis comparing potential alternatives was not presented.

Project Management

Blaine County Conservation District will manage the project. The management plan is quite simple, with the CD providing the grant funding as a cost share to the landowner, who will contract for the engineering and construction. The landowner has indicated that he will pay all costs in excess of the grant costs, which is estimated to be \$90,000. The landowner is a partner in the construction company that will complete the work. The CD will contribute administrative costs as an in-kind contribution.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$3,000	\$3,000
Professional & Technical	\$0	\$0	\$10,000	\$10,000
Construction	\$100,000	\$0	\$80,000	\$180,000
Total	\$100,000	\$0	\$93,000	\$193,000

The budget strategy provided in the application is reasonable. The costs not paid by the grant or in-kind contributions of the sponsor will be paid by the landowner.

A cost estimate was provided for the selected alternative and it appears to be reasonable. Engineering costs are relatively low based on the management plan that does not require bidding. If project costs are higher, the landowner will absorb the extra costs. The construction cost estimate does not include a contingency for unanticipated costs.

Benefit Assessment

The proposed project provides multiple renewable resource benefits. The current situation severely limits storage, and long-term viability is doubtful without improvements to the spillway. This project will increase storage by approximately 2,000 acre-feet. This will make the enhancements for recreation, and fish and wildlife viable. Letters submitted with the grant application substantiate significant public involvement and support for the project.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. The beneficial results include improved fish and wildlife habitat, opportunity for enhanced recreation activities, and economic benefits of recreation and irrigation. The project will improve safety for the downstream public.

Short-term construction-related impacts would be controlled through permitting and proper construction methodology.

Funding Recommendation

DNRC recommends no funding for this project. The project is privately owned and most of the benefits realized would be private not public.

Applicant Name	Deer Lodge Conservation District	
Project Name	Cottonwood and Peterson Creek Restoration Project – Phase I	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 5,000	Landowners
	\$ 12,500	USDA NRCS
	<u>\$ 5,000</u>	Watershed Restoration Coalition (WRC)
Total Project Cost	\$ 122,500	
Amount Recommended	\$	0

Project Abstract (Prepared and submitted by applicant)

The Cottonwood and Peterson Creek Restoration Project is a locally led watershed project aimed at improving water quality, water conservation, and fisheries. Both streams are tributaries to the Clark Fork River, and the two confluences are located within the City of Deer Lodge. The headwaters are located east of town in the Boulder Mountains.

The Watershed Restoration Coalition of the Upper Clark Fork (WRC), in association with the Deer Lodge Conservation District (DLCD), completed an assessment of nine streams as part of the East Valley Watershed Assessment under a 319 grant and a planning grant from the Montana Natural Resource Damage Program. Chemical, physical, and biologic data were collected under the study. The assessment evaluated the riparian corridor, aquatic life, chemical, and physical attributes of nine streams, with emphasis on Cottonwood and Peterson Creeks due to their size and biologic significance.

Impacts from riparian grazing, flow management, and habitat degradation from agricultural sources are common in the two watersheds, and a host of restoration actions are proposed to address major causes of water quality and fishery impacts. The headwaters of Cottonwood Creek and Peterson Creek are in much better condition than the rest of the East Valley tributaries, and several reaches are considered reference reaches for comparison. Review of the watershed data clearly supports the need for restoration and resource conservation in Cottonwood and Peterson Creeks.

WRC requests funding for water quality, stream flow, and fish passage improvements in Cottonwood and Peterson creeks. Flow management improvements are proposed to benefit both creeks and the Clark Fork River by mitigating sediment and nutrient sources and improving the lower reaches for brown trout passage. A permanent fish barrier is present near the middle of Cottonwood Creek and is proposed to remain intact for protection of genetically pure westslope cutthroat trout in the headwaters.

The watershed restoration plan for these two creeks focuses on the expansion of fishery benefits, flow augmentation, and implementation of additional water quality improvements in concert with the MFWP fishery biologist who will complete a wetted perimeter assessment in fall 2004. Specifically, future efforts will focus on providing fall spawning opportunities for brown trout and emergence for their young, augmenting flow through irrigation efficiency improvements, and mitigating remaining water quality problems (e.g, feedlots). Implementation of this project is the initial step needed to begin addressing natural resource issues in these two watersheds.

Project landowners have agreed to work with WRC. In addition to flow management, the landowners are interested in stabilizing streambanks, revegetating stream corridors, mitigating feedlot nutrient sources, and

augmenting flow for fisheries improvement. Restored watershed conditions will provide forage and cover for wildlife along with limited grazing opportunities by livestock under prescribed grazing plans.

Technical Assessment

Project Background

Cottonwood Creek and Peterson Creek originate in the Boulder Mountains (Deerlodge National Forest) southeast of the city of Deer Lodge. This area includes numerous streams supporting fisheries, a host of recreational opportunities, diverse wildlife, and a large agricultural base. Cottonwood Creek and Peterson Creek, which flow into the Clark Fork River at Deer Lodge, are subject to dewatering, resulting in streambed sedimentation, and elevated temperatures. Inefficient routing and application of irrigation water also contributes to an artificially high water table and unstable soil. Water quality is adversely affected and fisheries are compromised.

The Watershed Restoration Coalition of the Upper Clark Fork (WRC), in conjunction with the Deer Lodge Conservation District (DLCD), recently assessed Cottonwood and Peterson creeks and other Clark Fork tributaries as part of a Montana Department of Environmental Quality 319 grant. WRC is composed of four conservation district members, three weed board members, and one county commissioner.

The assessment evaluated the riparian corridors, aquatic life, and chemical and physical attributes of these streams and identified numerous impacts from riparian grazing and inefficient irrigation systems. The proposed project will address some of these impacts through a combination of water quality, streamflow, and fish passage improvements.

WRC's proposal for improvements to Cottonwood and Peterson creeks is part of a larger restoration effort in the Upper Clark Fork Basin that will seek funding from other sources.

Technical Approach

The proposed project includes the following goals:

1. Prevent year-round diversion of water.
2. Remove major fish barriers on the lower reaches of both streams.
3. Reduce sediment sources.
4. Reduce nutrient loading.
5. Improve overall stream fisheries and aquatic life.
6. Ensure adequate water supplies for agricultural needs.

Specifically, the project proposes to install three new irrigation diversions in Cottonwood Creek that would replace existing rock or debris structures that are currently blocking fish passage. It will also provide materials to upgrade other existing irrigation diversions in Peterson and Cottonwood creeks and provide for design and construction of two STEP pools to enhance fish passage at two locations in lower Cottonwood Creek.

The application contains little detail about installation of STEP pools, and there is no explanation for providing fish passage from the Clark Fork at the lowest diversion site when it currently captures all of Cottonwood Creek during most of the year. The lower site for a STEP pool includes a complex of water from the Clark Fork River in the Kohr's-Manning Ditch, and Cottonwood Creek. To ensure that fish enter Cottonwood Creek, the ditch and creek would need to be physically separated prior to building a fish passage structure. Involvement of Montana Fish, Wildlife & Parks in designing fish passage structures and guaranteeing adequate in-stream flows would strengthen the proposal. It is not clear if the materials for upgrading diversion structures in Peterson Creek will have any fishery benefits.

The proposed actions could result in improved irrigation efficiency, increased fish passage, and healthier year-round streamflows, but several issues need to be addressed. Resolving the in-stream flow and fish passage issues at the lowest diversion structure (Kohr's-Manning) will be necessary to provide brown trout recruitment to the Clark Fork River. Prior to any efforts to pass adult brown trout into Cottonwood Creek from the river, an analysis of potential spawning habitat and the fate of emergent fry should be completed. Flow

remains the key factor in improving the resident fishery potential and providing passage for adult trout and emergent fry. Guaranteed minimum flows need to be provided through water leasing or other mechanisms if fishery enhancement goals are to be achieved.

Project Management

The project will be administered by WRC and Deer Lodge Conservation District and their contractor. WRC holds meetings every two months that are advertised and open to public.

WRC will use vendors under the State of Montana Nonexclusive Term Contract or go out to bid to complete project design, oversight, and construction. The coordinator for WRC will manage and oversee the project and interact with DNRC on contractual requirements.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$6,000	\$0	\$5,000	\$11,000
Professional & Technical	\$15,402	\$0	\$12,500	\$27,902
Construction	\$78,598	\$0	\$5,000	\$83,598
Total	\$100,000	\$0	\$22,500	\$122,500

The proposed budget is clearly stated and appears reasonable. However, it includes construction costs for two STEP pools that have not yet been designed, and it does not make provisions for maintaining the structures after construction. Fish passage structures generally require significant maintenance and monitoring for proper operation.

The only matching funds are in-kind staff time from NRCS of \$12,500, in-kind administrative oversight from WRC of \$5,000, and in-kind labor from area landowners of \$5,000.

Benefit Assessment

The proposed project provides several renewable resource benefits. Replacement of permanent rock and debris structures with treated lumber pin-and-plank structures will allow diversion barriers to be removed, providing increased streamflow during the non-irrigation season. Water management in Cottonwood Creek will be improved as a result of operating diversions only during permitted-use periods.

The project has the potential of enhancing brown trout populations in the Clark Fork River, but only if adequate in-stream flow is available to allow adult fish access to Cottonwood Creek, and if mechanisms are in place to allow downstream passage of adult and young fish to the Clark Fork.

The project will likely help preserve existing fish populations in Cottonwood Creek if in-stream flow and fish passage solutions can be provided.

Removal of existing barriers to fish passage and installation of more efficient diversion structures may enhance outdoor recreation if additional water is voluntarily left in the streams by irrigators. The fisheries improvements tied to new irrigation diversions will not be realized if fish passage issues for adult spawning fish and out-migration of young fish are not resolved and if increased in-stream flows are not provided.

The project has letters of support from members of WRC and the county commission but not from any conservation organizations or from Montana Fish, Wildlife & Parks.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no long-term adverse impacts have been identified. There may be some short-lived turbidity increases due to construction activities, although these likely would be mitigated.

Long-term environmental consequences could be positive if in-stream flows are provided through water leasing or some other mechanism for guaranteeing minimum flows.

Funding Recommendation

DNRC does not recommend grant funding for this project. DNRC recommends re-application after development of a restoration plan that addresses spawning and recruitment of Clark Fork River brown trout in Cottonwood Creek. This plan should include in-stream flow agreements, evaluation of Cottonwood Creek habitat for spawning and rearing as well as a solution to the co-mingling of Cottonwood Creek water and irrigation water from the Kohr's-Manning ditch.

Applicant Name	Missoula County		
Project Name	Grant Creek Restoration and Flood Mitigation		
Amount Requested	\$ 100,000	Grant	
Other Funding Sources	\$ 409,500	Applicant	
	\$ 2,938,500	Federal Emergency Management Agency (FEMA)	
	\$ 70,000	Montana Department of Transportation (DOT)	
	<u>\$ 400,000</u>	Mullan Trail Homeowners Association	
Total Project Cost	\$ 3,918,000		
Amount Recommended	\$ 0		

Project Abstract (Prepared and submitted by applicant)

Missoula County seeks a solution to flood hazards and environmental degradation in lower Grant Creek within the western Missoula valley. The proposed project will balance hydraulic capacity, flood control, sediment management, maintenance, new development, airport expansion, aesthetics, and aquatic habitat. The project goals for lower Grant Creek are to reduce surface and groundwater flood problems; improve fish passage and habitat; and improve recreational and aesthetic opportunities.

A 10-year recurrence flood in 1997 resulted in extensive damage to homes in the Mullan Trail subdivision adjacent to lower Grant Creek. Multiple lawsuits resulting from the \$6.2 million damage incurred by this flood necessitated a re-evaluation of this segment of Grant Creek. Flooding was observed to come from creek overflow as well as groundwater seepage into daylight basements. Flooding occurs coincident with flow in unlined irrigation ditches. Further upstream, the stream channel is severely incised, and erosion is contributing significant amounts of sediment to downstream reaches of the creek. This is reducing the hydraulic conveyance of downstream reaches, and is contributing to environmental degradation of the creek ecosystem. Native cutthroat trout utilize lower Grant Creek as a migration corridor from the Clark Fork River to spawning habitat in upper reaches. Several undersized and failing culverts at road crossings are known fish passage barriers.

The proposed project involves a collection of individual mitigation projects that will achieve the mutual objectives of environmental restoration and flood hazard reduction along the entire lower creek system. The project will preserve renewable resources by restoring a degraded section of lower Grant Creek, and it will conserve natural resources by improving fish passage and habitat. Conservation of natural resources will also be achieved through several mitigation measures that will improve the efficiency of irrigation practices while at the same time reducing groundwater flood potential.

Technical Assessment

Project Background

The applicant is proposing a construction project on lower Grant Creek northwest of Missoula. The project boundary extends from Prospect Drive to the Clark Fork River confluence. The project encompasses 2,200 acres. Urban land uses, agricultural practices, and other rural land uses have modified the historic Grant

Creek channel, increasing flooding problems. In 1997, flooding caused \$6.2 million in damages. A key objective of the mitigation project is to reduce flood hazards to the Mullan Trail Subdivision because this area has the greatest potential for continued flood losses.

Technical Approach

Over five miles of stream channel and floodplain would be restored in the Grant Creek corridor. Project completion is planned for December 2006. The project would develop a naturally functioning stream corridor that would require minimal actions by the city, county, and affected neighborhoods to ensure the system functions properly in the future. Specific mitigation measures would include:

- Upsizing culverts;
- Constructing a new railroad bridge to accommodate flood flows;
- Removing abandoned instream structures;
- Constructing low elevation berms;
- Constructing an irrigation diversion control structure on the Clark Fork to reduce basement flooding from the drain ditch;
- Installing irrigation ditch lining to reduce seepage flooding;
- Reestablishing historic creek channel areas;
- Restoring channel banks and habitat; and
- Improving floodplain conditions.

The project consists of four phases.

1. "Planning and Alternative Analysis" includes hydrologic and hydraulic analyses to determine design flows, floodplain constrictions, and preliminary floodplain boundaries. As part of Phase I, modeling would be performed to identify up to four construction alternatives that would include some or all of the mitigation measures as well as a "no-action" alternative. A public scoping process would be conducted on the four alternatives before the final construction alternative is selected.
2. "Pre-Design and Permitting" for the selected construction alternative includes sediment transport analysis, fluvial characterization, hydraulic modeling, and environmental compliance.
3. "Final Design and Construction Documents" involves additional surveying and mapping and final construction cost estimates.
4. "Construction and Monitoring" includes baseline monitoring of water resources and geomorphic conditions.

Project Management

The Missoula County Office of Public Works Director would be the project manager, and a project management team has been established. In June 2002, a Project Management Plan was prepared by Missoula County in coordination with the U.S. Army Corps of Engineers (COE). The plan details individual responsibilities, task schedules, milestones, deliverables, and task budgets. The plan calls for bi-weekly updates, monthly coordination meetings, progress monitoring, quality control, meetings with stakeholders and the public, assistance with funding applications, and development of a long-term monitoring and management plan. The public involvement plan includes continued public meetings; contact information, project activities and updates posted on the county's website; news media releases; and three open meetings for the screening and selection of final construction project alternatives.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$159,500	\$159,500
Professional & Technical	\$15,125	\$0	\$418,375	\$433,500
Construction	\$84,875	\$0	\$3,240,125	\$3,325,000
Total	\$100,000	\$0	\$3,818,000	\$3,918,000

Approximately 500 people, 150 households, and 2 farms would be served by this project. Engineering services has been budgeted at \$15,125. Budget details are provided for each task that may become part of the final project after the public input process is completed.

Secure match monies are: \$159,500 in-kind services and \$250,000 cash match budgeted by Missoula County, \$400,000 cash from the Mullan Trail Homeowners Association, and \$70,000 from DOT to replace two culvert crossings. In fiscal year 2003, the applicant submitted a \$3 million grant request to the FEMA Pre-Disaster Mitigation Competitive Grant program. If this first request is denied, the applicant plans to submit again in fiscal year 2004. The county has also requested alternate funding from COE and DFWP. A 25 percent match is required to receive the federal dollars.

The alternative of buying and removing 70 residential structures from the floodway would cost approximately \$20 million and is not feasible. The floodway on Grant Creek is where floodwaters inundate the area and remain until soaked into the ground. The City of Missoula, Missoula County, DOT, and Montana Rail Link are responsible for maintaining portions of Grant Creek. The selected alternative is designed to reduce maintenance liability at the project outset. Missoula County is seeking funds for a long-term a monitoring program for this project, including a potential collaborative effort with the University of Montana.

Benefit Assessment

COE determined that the project would result in a favorable total project benefit/cost ratio of 2.9. The project would provide full protection from 100-year events. The applicant anticipates the project would effectively manage flood flows, and up to 30 residential structures would no longer be in the floodway. Detailed floodplain maps would be produced along with flood elevation and velocity data. Grant Creek floods do not have high velocities or depths, so loss of life in flood events is not expected.

The new irrigation diversion control structure on the Clark Fork River would conserve 80 to 100 cfs of water from being diverted. Ditch lining would also conserve water. New data and maps designating the flood areas would improve floodplain management. New septic systems would be sited outside the 100-year floodplain, storm water drainage would be improved, and surface and groundwater quality would be preserved. Removing fish barriers by culvert replacement would allow for the development of new westslope cutthroat trout spawning areas upstream in the headwaters. Reconfiguring and revegetating the channel and floodplain would develop a sustainable stream system, improve aquatic and riparian habitat benefiting fish and wildlife, and provide recreation and aesthetic values.

Environmental Evaluation

Adverse impacts and necessary mitigation measures would be addressed in selecting the final construction alternative. The project would result in short-term adverse environmental impacts due to in-stream construction. Mitigation measures would be taken during construction to protect the fishery and to reduce other impacts to the extent possible. No long-term adverse impacts are anticipated. There are no wetlands in the project area; the nearest wetland is located 0.7 mile upstream.

Funding Recommendation

DNRC does not recommend funding at this time. DNRC recommends reapplication after completing an alternative analysis with the selection of a preferred alternative.

Applicant Name	Montana Heritage Commission
Project Name	Providing Access to Public Lands – Comfort Stations

Amount Requested	\$ 99,950	Grant
Other Funding Sources	\$ 0	
Total Project Cost	\$ 99,950	

Amount Recommended	\$ 0
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Project Abstract (Prepared and submitted by applicant)

In 1997, the State of Montana acquired 160 acres of land in Madison County for the purpose of maintaining and developing one of the most important parts of Montana's mining history. The villages of Virginia City and Nevada City, and the public lands of Alder Gulch that surround the towns, tell the stories of our ancestors attempts to extract gold from a high and remote valley. The site has national and international significance. In 2003, we hosted visitors from 41 states and 15 foreign countries.

Mining efforts had many unintended, long-term consequences that established prime habitat for many of Montana's fish and wildlife species. Although not thought of at the time, mining, especially dredges, established numerous ponds, side channels, pools, parallel creeks, and dams. These mini-wildlife refuges provide hours of visitor enjoyment for both residents and tourists.

Currently, only two outdated and poorly designed commodes are adjacent to this public open space, limiting the development and protection of this renewable resource. These units are overused, in a difficult to access location, and past the end of their useful life.

This public infrastructure project grant request asks for funding to help build two new comfort stations. One would replace/upgrade the unit in Virginia City, and the other would provide toilets for visitors parking in Nevada City.

This project will address waste management needs. It will enhance the common well-being of Montanans by better managing waste, allow the development of the natural resources adjacent to the comfort stations, conserve gasoline by allowing people to access toilets closer to the wildlife areas, and position us to better manage visitor impacts on the environment. The project benefits fish and wildlife; improves public, water-based recreational activities (such as bird watching, fishing, wildlife viewing, hunting, etc.); and provides opportunities for improved and more accessible trails.

Technical Assessment

Project Background

The project is located in Alder Gulch at Virginia City and Nevada City. In 1997 the State of Montana acquired 160 acres of land, almost 250 buildings, and more than 1,000,000 artifacts from the Bovey family. A majority of the real estate contains wildlife viewing opportunities, birding areas, trails, fishing, and hunting opportunities.

The proposal is to replace a public restroom in Virginia City and to build a new public restroom in Nevada City. The current public restroom in Virginia City is the only public restroom in both towns and is in a dilapidated state. Porta-potties are in use at both sites during the summer.

The proposed comfort stations will be built adjacent to the train depots in Virginia City and Nevada City. There is a proposed walking trail to be constructed between the two train depots, and the Virginia City site has a children's fishpond located nearby.

Technical Approach

The goals of the project are to provide better access to public land and address public health issues by building public restrooms or "comfort stations." The applicant proposes to contract out the preparation of

drawings, site preparation, and the construction of the comfort stations. In-house staff will provide an archeological review, preparation of bid documents, awarding of the bid and general administration.

The applicant presented the following alternative solutions: (1) no action, (2) continue to periodically place porta-potties in locations with the most usage, and (3) the preferred alternative of building comfort stations in Virginia City and Nevada City. The application provided draft schematics and a budget to construct pre-cast concrete buildings, however other alternative solutions were not evaluated, such as: building just one comfort station, constructing the comfort stations of material other than concrete, or completing the work on the comfort stations with current staff.

A secondary reviewer commented that the sketch provided indicated that the restroom stalls dimensions did not meet ADA standards.

Project Management

The Heritage Commission employs a site manager who would monitor the progress of the construction on site. The Heritage Commission would coordinate with the town council of Virginia City, the Madison County Commissioners, the National Park Service, and DNRC. Public input will be invited by advertising Heritage Commission meetings, and posting the drawings for the proposed comfort stations in the Virginia City Post Office.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$6,100	\$0	\$0	\$6,100
Professional & Technical	\$5,300	\$0	\$0	\$5,300
Construction	\$88,550	\$0	\$0	\$88,550
Total	\$99,950	\$0	\$0	\$99,950

The costs associated with building the two comfort stations are reasonable for precast flush units. Professional/technical costs at 6 percent of the budget or \$5,300 and administrative costs at 6.5 percent of the project or \$6,100 also seem reasonable. Construction costs will be \$40,700 for the comfort station in Virginia City and \$47,850 for the comfort station in Nevada City.

Benefit Assessment

The primary resource benefits of the proposed project are conservation, management, and preservation. If recommendations generated by the proposed project were implemented, the project would likely preserve water quality by directing public usage. Recreational opportunities will be enhanced by having the comfort stations near birding and wildlife viewing and fishing areas.

It was noted by several reviewers that this project would be hooked up to the new sewer system that both communities just installed and the Heritage Commission's new commodes would help retire the debt on these systems by paying their share of capital and operational costs for the system.

Environmental Evaluation

There will be no long-term environmental impacts from this project. Most of the impacts will have a positive effect on the environment. There will be short-term impacts during construction, such as dust and noise that will need to be mitigated.

Funding Recommendation

DNRC recommends no funding for this project. The applicant has made a case for the need for the comfort stations, but mostly from a public health standpoint. The applicant has not demonstrated that the RRGL program's criteria of conserving, managing, developing, or preserving a renewable resource can be adequately met.

CHAPTER III

Coal Severance Tax Loans to Public Entities

Application Administration and Project Review Procedures

Applications for public loans are accepted by DNRC's Resource Development Bureau until May 15 of each even-numbered year at the same time other applications are due from public applicants under this program. A \$250 application fee is required with each application for a large public loan. These loans are provided with proceeds from the sale of coal severance tax secured bonds and frequently are offered at a subsidized interest rate. The subsidy is paid with coal tax revenues.

Project Solicitation

Applications for public loans are solicited through the same process DNRC uses to solicit other public grant and loan applications described in Chapter II. The availability of low-interest loan funds is widely advertised through direct mailings, press releases in association and commercial newspapers, and with contact made during promotional workshops conducted by DNRC, DOC, and DEQ at the local level. The same application form is used to solicit both grant and loan applications.

Application Review

All public loan applications received by the deadline are evaluated for completeness. Those missing documentation, application fees, or other basic requirements are notified and allowed time to submit additional material. After applications are reviewed for completeness, and any additional information needed is obtained from the sponsor, completed applications are given to the team of key reviewers for review and evaluation. **Figure 1**, in Chapter II, shows the flow of the application review process. Loans are reviewed to determine financial, economic, and technical feasibility.

Funding Recommendations

All feasible public loan applications eligible for funding receive a favorable funding recommendation if the applicant demonstrates the ability to repay the loan. DNRC's recommendation includes the amount of financing needed to meet project and financing expenses and the interest rate suggested. There is no maximum allowable funding level. Public loans are limited to the amount an applicant has the ability to repay under the standard repayment terms and by DNRC's bonding capacity.

Availability of Loan Funds

In 1981, the legislature adopted SB 409 to provide up to \$250 million in Montana coal severance tax bonds. Coal severance tax bonds are issued for financing projects and activities in the state specifically authorized by the legislature. Statutes dictate that loans made from coal severance tax bond proceeds are to be administered by DNRC, and that DNRC is to review each project to determine its technical and financial feasibility.

Although the legislation was adopted in 1981, coal severance tax loans were not issued for the first few years because the constitutionality of the state's bonding authority under this program was initially challenged. In February 1984, the Montana Supreme Court ruled in the state's favor in *Grossman v. State of Montana*, and the first Montana coal severance tax bond was sold to finance loans during that same year.

In September 1985, the board of examiners adopted a general resolution pursuant to which all subsequent coal severance tax bonds have been issued. A copy of this resolution may be obtained from DNRC. The general resolution requires the bonds issued be secured on a parity basis. This means that all subsequent coal severance tax bond issues have the same right or ability on proceeds flowing into the trust fund to pay bondholders. However, to assure bondholders there always will be enough coal severance tax revenue to meet debt service payments, the general resolution restricts the cumulative amount of bonds that can be issued. This restriction is more constraining than the \$250 million statutory limit. The general resolution does

not allow any additional coal severance tax bonds to be issued if annual debt payments exceed 50 percent of the coal severance tax revenue allocated to the trust, plus 50 percent of the loan repayments received from local government borrowers.

Loan Repayment

Coal severance tax revenue is used to pay the difference between payments received from local government borrowers and the state coal severance tax bond payments. Thus, coal severance tax bonds are paid with revenue from payments from local government borrowers along with coal severance tax proceeds.

To implement these repayment provisions, the statute established a fund structure within the permanent coal tax trust fund. Fifty percent of coal severance tax proceeds flowing to the permanent trust fund are first deposited in the coal severance tax bond fund. A portion of the proceeds deposited in the bond fund are transferred to the debt service account to pay for the interest rate subsidies. An amount equal to a year's debt service payment on all coal severance tax bonds is held in reserve in the bond fund.

Proceeds that exceed the subsidy payments and reserve requirement are transferred to the coal severance tax school bond contingency account. This fund was established to provide security to school bonds issued during the 1993 biennium. The remaining proceeds are then transferred into the Treasure State Endowment Fund and the Coal Severance Tax Permanent Fund, which retains the remaining 80 percent of this income.

With the exception of the Treasure State Endowment Fund, the interest earnings associated with all account balances are transferred to the coal severance tax income fund. These interest earnings are then transferred to the general funds.

Interest Rates

Loans may be provided at a rate less than the rate at which the state bond is sold, for all or part of the term. During the financial review of each loan application, DNRC prepares a funding recommendation that includes a recommended interest rate subsidy. This subsidy is available for loan applicants only. Applicants who receive grant funding in conjunction with a loan do not receive an interest subsidy. Recommendations are developed to be consistent with past direction provided by the Long Range Planning subcommittee of the legislature. In 1987, the legislature directed that the recommended subsidy for municipal projects typically be based on the user rate as a percentage of the "median household income." The schedule for subsidies with respect to municipal projects is presented below.

1. If less than 1% of the median household income is required to pay user rates, no subsidy is recommended;
2. If the user rate is at least 1% but less than 2%, a 1% interest rate subsidy for 5 years is recommended;
3. If the user rate is at least 2% but less than 4%, a 2% interest rate subsidy for 5 years is recommended; and
4. If the user rate is more than 4% of the median household income, a 3% interest rate subsidy for 5 years is recommended.

The basic interest rate on coal severance tax loans is determined by the bond market at the time coal severance tax bonds are sold. The rate of interest on most loans from the program will vary in accordance with the rate on the state coal severance tax bonds. The basic rate of interest for each public loan financed from the proceeds of a single bond issue is the same. Subsidies vary, depending on legislative authorization.

Project Management

DNRC reviews each public loan application to determine whether the project is financially feasible. A project is considered financially feasible if sufficient funds can be made available to complete the project, and if sufficient revenue can be obtained to repay the loan and to operate, maintain, and replace the project. After a public loan is authorized by the legislature and the project sponsor is ready to secure financing, DNRC performs a more thorough review of the applicant's ability to repay the loan. At this time DNRC may require

access to the applicant's most recent financial statement, budget document, and other documentation in order to assess whether the proposed project is truly financially feasible.

If the borrower provides documentation of the ability to repay a loan and all legal requirements to incur debt are met, a bond purchase agreement is prepared and executed to make specific requirements and covenants with respect to a project or improvements to a project being financed. Borrowers must acquire all property rights necessary for the project, including rights-of-way and interest in land needed for a project's construction, operation, and maintenance. As appropriate, these and other stipulations also are contained in a bond resolution. Unless otherwise authorized, each loan--including principal and interest--shall be payable over a term approved by DNRC not to exceed the term authorized by the legislature. The cost of issuing the state's bond also is paid by borrowers.

Each borrower must agree not to sell, transfer, lease, or otherwise encumber the project, any portion of the project, or interest in the project without DNRC's prior written consent. Further, the borrower must notify DNRC of any changes or modifications in a project either before or during construction. Borrowers are required to acquire and maintain, with respect to the project, property, casualty, and liability insurance. Insurance policies must name DNRC as a certificate holder for notification purposes.

For local government revenue bonds, borrowers must establish a system fund to segregate the revenue of the system or district. Within the system or district fund, the following accounts are generally established: construction account, operating account, revenue bond account, reserve account, replacement and renewal account, and surplus account. These accounts ensure that the system's revenue and other funds are properly applied in a manner reasonably satisfactory to DNRC.

Loans are disbursed by warrants drawn by the state auditor, or by wire transfers authorized by the state treasurer in accordance with the provisions of this rule and the bond resolution. No disbursement of any loan funds shall be made unless DNRC has received from the borrower (1) a duly adopted and executed bond resolution in a form acceptable to DNRC; (2) an executed bond in a principal amount equal to the loan amount, also in a form acceptable to DNRC; (3) a certificate from an official of the governmental unit stating that no litigation is threatened or pending that would challenge the governmental unit's authority to undertake the project, to incur the loan, to issue the bonds, and to collect revenue; (4) an opinion from the bond counsel that the bond is a valid and binding obligation of the borrower payable in accordance with its terms; and (5) any other closing certificates or documents that DNRC or the bond counsel may require.

Project Monitoring

Borrowers must maintain proper and adequate records of accounts that show the complete and correct entries of all receipts, disbursements, and other transactions related to the project and, if applicable, the monthly gross revenue derived from the projects operation. Any segregation and application of the gross revenue resolution also must be shown in such reasonable detail as may be determined by the borrower in accordance with generally accepted accounting practices and principles.

Loan agreements require quarterly progress reports, expenditure reports, a final report, and annual financial reports over the term of the loan. Projects are closely monitored each quarter when quarterly reports are submitted. Borrowers submit documentation for all expenditures and these are checked against the loan agreement.

Under the usual terms of DNRC's bond purchase agreement, each borrower must comply with reporting requirements during the construction period and continue to do so throughout the term of the loan. According to these requirements, within 180 days after the close of each fiscal year, the borrower must prepare and supply to DNRC an appropriate financial report with respect to the project for such fiscal year. Where applicable, this report includes a statement that details the project's income and expenditures for the fiscal year; the identification of capital expenditures that separate them from operating expenditures; a balance sheet as of the end of the fiscal year; the number of premises connected to the project at the end of the fiscal year; and the amount of cash on-hand in each account of the fund at the end of the fiscal year. The borrower must also provide a list of the insurance policies and fidelity bonds in force at the end of the fiscal year, that shows the amount of coverage, the risks covered, the name of the insurer or surety, and the expiration date of the policy or bond.

Figure 4 Coal Severance Tax Loans / Resource Development Public Loan Balances

Applicant	Balance Due	Applicant	Balance Due
Anaconda - Deer Lodge County	\$ 69,063	Lockwood Irrigation District	\$ 64,026
Beaverhead County/Red Rock Water and Sewer District	1,753,115	Malta	2,222,456
Belgrade	75,770	Miles City	685,393
Bitterroot Irrigation District	600,393	Mill Creek Water and Sewer District	570,979
Bozeman	176,337	Neihart	106,615
Bozeman	275,962	Pondera County Canal and Reservoir Company	223,136
Broadwater Power Project	19,480,000	Pondera County Canal and Reservoir Company	177,509
Buffalo Rapids Irrigation District	855,000	Poplar	63,848
Charlo Water District	4,312	Sage Creek Water District	423,984
Conrad	15,554	Sanders County Water District at Noxon	66,311
Culbertson	54,475	Shelby	27,291
Daly Ditches Irrigation District	334,158	State Water Projects Bureau, DNRC	
Denton	55,223	Bair Dam	905,014
Dutton	80,923	Broadwater-Missouri Pipespan	318,937
Dutton	14,479	Deadman's Basin (Barber Canal)	325,756
East Bench Irrigation District	416,018	East Fork Rock Creek Dam	650,000
East Helena	144,452	Nevada Creek Dam	476,096
Ekalaka	42,656	Petrolia Dam	279,928
Ennis	8,303	Shields Canal Water Users Association	7,839
Ennis	523,535	Upper Musselshell Water Users Association	32,563
Fairview	127,656	Yellowwater Water Users Association	5,679
Flathead County for Evergreen	2,254,664	Sun Prairie Water and Sewer District	274,939
Forsyth	216,707	Sun Prairie Water and Sewer District	123,537
Fort Benton	99,875	Three Forks	47,025
Fort Benton	401,039	Tin Cup Water and Sewer District	217,043
Gardiner - Park County Water District	137,461	Tongue River Project	9,851,282
Glasgow	794,674	West Yellowstone	123,481
Glendive	453,869	West Yellowstone	208,391
Harlem	128,650	White Sulphur Springs	103,692
Havre	344,121	Whitefish	297,978
Huntley Irrigation District	997,649	Wibaux	129,455
Huntley Irrigation District	239,307	Yellowstone County	30,045
Huntley Irrigation District	87,581	Yellowstone County	<u>45,929</u>
Huntley Irrigation District	236,665		
Hysham	151,956		
		TOTAL	\$ 50,737,759

Figure 5 **Coal Severance Tax Loans / Water Development Public Loan Balances**

Applicant	Balance Due
Antelope County Water and Sewer District	\$ 53,351
Culbertson	9,153
Cut Bank - North Glacier Water and Sewer District	39,836
Kevin	37,690
Park County	<u>38,796</u>
TOTAL	\$ 178,826

TOTAL OUTSTANDING PUBLIC LOANS **\$50,916,585**

Figure 6 **Public Loans Authorized in 2003 and Seeking Reauthorization**

Applicant	Amount	Rate
DNRC/North Fork of the Smith River Dam Rehabilitation	\$ 572,000	Market-not to exceed 4.5%
Mill Creek Irrigation District	\$ 557,000	Market-not to exceed 4.5%

CHAPTER IV

Renewable Resource Grants and Loans to Private Entities

Grant Application Administration and Project Review Procedures

As discussed in Chapter I, applications for water-related projects from any individual, association, for-profit corporation, or not-for-profit corporation, may be considered for funding. Only water-related projects may be funded. They must have quantifiable benefits that will exceed costs. Projects must also provide public benefits in addition to any private benefits.

Grant Project Solicitation

To solicit applications from private entities that provide significant public benefits, DNRC has chosen to target public water systems operated by private water user associations and small agricultural projects that need help. The agricultural projects have included inspection on private high-hazard dams, and water measuring devices on chronically dewatered streams. To this end, DNRC has contracted with Montana Rural Water Systems, Inc. (MRWS) to solicit projects from private drinking water systems, review projects, and advise DNRC on their validity, feasibility, and performance. Dam and water measuring projects were solicited by the Dam Safety Bureau and the Water Management Bureau of the Water Resources Division of DNRC. In addition to the projects solicited by the above-mentioned organizations, DNRC also accepts applications at any time from any water system. Grantees are given one year to complete the project.

Information requested in the application includes:

- name, address, and telephone number of applicant;
- description of the problem, including the history and alternative methods of rectifying the problem;
- complete budget information including funding sources and cost comparatives of the alternatives;
- description of the public and private benefits of the project and the need for and urgency of the project;
- environmental impacts of the project, both positive and negative; and
- technical information and approval, if necessary, by DEQ, EPA, or other responsible enforcement agency.

Grant Application Review

All applications received by MRWS were evaluated and ranked according to the extent each application represents a project that is critically needed, will protect public health, provides opportunities for resource conservation, and improves the environment. Applications received by Dam Safety and Water Management were reviewed by those units, and submitted to Resource Development Bureau with a recommendation. Other applications are also evaluated by DNRC staff. All applicants must hold or be able to acquire all necessary lands other than public lands and interests in the lands and water rights necessary for the construction, operation, and maintenance of the project.

Criteria for evaluating private grants is similar to the criteria outlined in Chapter II for public grants. As with public grants, private grants are also evaluated to determine the potential adverse environmental impacts. Projects that would result in significant impacts would not be recommended for funding by DNRC until an environmental assessment or environmental impact study has been completed. Recommendations are made to minimize impacts and to ensure that appropriate steps are taken to protect the environment. Any potable water system project must be approved by DEQ to ensure that it meets state standards.

Grant Funding Recommendations

According to Montana's Constitution, the legislature may not appropriate funds to private individuals. However, state entities have the authority to distribute public funds to private individuals. To provide for private grants in 1993, the legislature appropriated \$100,000 to DNRC to fund grants for private entities.

Since 1993, with the exception of the 2003 session, the legislature has appropriated \$100,000 to DNRC each biennium to fund grants to private entities.

DNRC's role is to review and screen grant requests to determine whether the proposed projects are technically and financially feasible. DNRC will evaluate MRWS, Dam Safety, and Water Management, recommendations based on criteria outlined in statute; within funding constraints the highest ranked projects will be recommended to DNRC's director for funding. Feasibility studies, research, and/or public information projects will not be recommended for funding. By law, grant funding for any project may not exceed 25 percent of the total estimated cost of the project.

Grant Project Management

After DNRC's director has acted on the funding recommendations prepared by staff, DNRC notifies the applicants of their funded or not-funded status. DNRC does not reimburse any project cost incurred before a formal funding agreement is executed.

Grant Project Monitoring

Procedures for monitoring projects, to ensure the program's intent is met, are primarily driven by a project grant contract agreement between DNRC and the project sponsor. The equivalent of 1 full-time staff administers active private grants and all private loans. MRWS has agreed to provide technical support to private grant projects during design and construction phases. Budget and staffing constraints preclude DNRC's site involvement at all projects.

Project sponsors must: (1) pay all project costs, (2) submit a claim and obtain a reimbursement of allowable costs from DNRC, or (3) arrange for an advance of funds. Invoices may be submitted monthly, and all costs must be supported by invoices, receipts, or both.

Grant Project Evaluation

Grant agreements require expenditure reports and a final report. During a project's contract term, the project sponsor must submit quarterly reports to DNRC. These reports must reflect the percentage of the project completed, the project costs to date, any problems encountered, and the need for any amendment to the grant contract. In response to changes in project scope of work, time line, or budget, amendments to grant agreement are prepared and issued. Amendments will continue to be the technique used to modify projects to adjust for changes in scope, budget, or timeliness. Figure 7 lists the private grants that have been approved since October 2002.

FIGURE 7 Private Grant Applications Since October 2002

PROJECT SPONSOR	AMOUNT
Orren Kielh	1,150.00
Tom Cummings	1,130.00
Richard Petaja	1,025.00
Deadman's Basin Water Users Assn	4,250.00
Meadow Lake Estates	5,000.00
Clarke Fork & Silver Tip Ditch	5,000.00
Big Creek Lakes Reservoir Assn	<u>607.75</u>
TOTAL	\$ 18,162.75

Private Loan Application and Project Review Procedures

Loans to private individuals also must promote and advance the beneficial use of water and allow Montana's citizens to fully use the state's water. Loan funding became available in 1981 when the legislature earmarked \$350,000 under the former Renewable Resource Development program to finance loans to private individuals. At the same time, DNRC was given the authority to issue general obligation bonds to finance private loans.

Loan Project Solicitation

Projects are solicited through press releases, public meetings, and word of mouth. Promotion by irrigation equipment dealers who are aware of the program, encouragement from local NRCS offices and conservation districts, and presentations by staff at various industry functions also serve to solicit applications for loan funding.

Loan Application Review

Loan applications are submitted at any time. DNRC staff reviews the application for completeness and requests additional information when needed. Technical aspects of the project are usually completed by NRCS or a private engineer. If the project is not designed by a qualified professional, DNRC will closely review the project design and specifications. Financial review is completed by DNRC and includes an evaluation of the applicant's financial strengths, weaknesses, and risk-taking ability. This also includes an evaluation of the security offered and a determination of DNRC's relative security position DNRC will have. All of these factors are considered in the recommendation to the loan committee.

Loan Funding Recommendations

Applications that meet feasibility and eligibility criteria are funded if the applicant demonstrates the ability to repay the loan. Projects must be technically and economically feasible, and must pay for themselves over the life of the installation through water savings, increased crop production, or other measurable benefits.

For private individuals, \$200,000 is the maximum loan amount allowable under the Renewable Resource Grant and Loan Program. The 1997 Legislature amended the statute to allow DNRC to accept applications and loan funds to water user associations. These loans are limited to \$300,000 rather than the \$200,000 for private individuals. Loans are for a term not longer than 30 years or the estimated useful life of the equipment purchased or materials installed. For new irrigation equipment, 15 years is the allowable term; for used irrigation equipment, the term usually is 10 years or less.

Availability of Loan Funds

DNRC has the authority to issue general obligation Renewable Resource bonds totaling up to \$30 million to finance private loans. Changes made by the 1995 Legislature allow DNRC to have up to \$30 million of general obligation Renewable Resource bonds outstanding. Since the program's inception, bonds totaling about \$30.2 million have been issued to finance private loans. Presently, \$16.5 million in bonds is outstanding. To finance loans, DNRC sells bonds on the open market.

Interest Rates

The rate of interest on the state's general obligation bond determines the interest rate for private loans. The basic rate for private loans has varied from 4.03 to 9.5 percent. Tax law has also contributed to increased interest rates. Before 1986, state bonds sold to finance DNRC projects were tax-exempt. The tax law of 1986 thereafter prohibited financing private ventures with tax-free bonds. Therefore, bond sales to finance private projects after 1986 have been taxable (federal taxable, state tax-exempt). Because investors demand a higher interest rate on investments when their investments are subject to federal income tax, sale of these taxable bonds resulted in higher interest rates than those of the earlier, tax-exempt bonds.

In addition to interest costs, borrowers also pay a share of bond issuance costs proportionate to the percentage of the bond used to finance their loan. Higher interest rates and issuance cost charges have made private loans less attractive than those offered when the program first started. Although less attractive, private loans remain competitive with conventional financing because the rate on taxable bonds is still slightly lower than interest rates obtainable from conventional financing. DNRC loans also provide financing at a fixed interest rate for a period longer than that available to borrowers through their local financial institutions.

Longer terms and competitive fixed interest rates, in most cases, continue to make these loans attractive to borrowers interested in long-term financing for major equipment or system purchases. The exception are loans for less than \$10,000. For small loans, closing costs will outweigh the benefit of DNRC's lower interest

rate. DNRC recommends that projects needing less than \$10,000 seek funding from other sources. Closing costs include a \$150 non-refundable application fee and title insurance.

Loan Project Management

Borrowers must acquire all property rights necessary for the project, including rights-of-way and interest in land needed for the construction, operation, and maintenance of the project. Title insurance, a title opinion or other documents showing the ownership of the land, mortgages, encumbrances, or other liens must be provided to DNRC.

Loans must be secured with real property valued higher than the loan amount requested. According to statute, security equal to at least 125 percent of the loan's value is required. Loans may be secured with a first or second real estate mortgage, an assignment of accounts receivable, certificates of deposit, or similar securities, or other security as accepted by DNRC. To adequately secure the state's interest, DNRC requires a security equal in value to at least 150 percent of the loan. For example, a loan application for \$100,000 would require real estate security of \$150,000. DNRC will accept a second mortgage on property if the state's interest can be adequately secured. DNRC may require an appraisal of real property used for securing a loan. Cost of the appraisal must be paid by the applicant.

After an application is approved for financing, interim financing may be secured by the applicant, with interest costs included in the DNRC's loan financing. The Renewable Resource Grant and Loan Program does not refinance existing loans; only new ventures are eligible.

Loans to private entities are disbursed by warrants drawn by the state auditor or wire transfers authorized by the state treasurer. Before disbursement can occur, all loan documents must be properly signed, security documents must be filed with the county clerk and recorder, the final title insurance policy must be in force, and an invoice must be submitted by the borrower to document the use of funds.

Loan Project Monitoring

Project construction is monitored by NRCS if there is cost-share money involved, by the borrower as he has a vested interest in the successful completion of the project, and by bureau staff through field visits when possible.

Borrowers must maintain proper and adequate records of accounts that show the complete and correct entries of all receipts, disbursements, and other transactions related to the project and, if applicable, the monthly gross revenue derived from the project's operation. Any segregation and application of the gross revenue resolution also must be shown in such reasonable detail as may be determined by the borrower in accordance with generally accepted accounting practices and principles.

Loan Project Evaluation

Through its monitoring efforts, DNRC conducts an ongoing effort to evaluate the projects funded under the Renewable Resource Grant and Loan Program. DNRC will continue to review each final report as has been done in the past. This review will be documented to indicate whether the project successfully completed the objectives outlined in the original application as specified in the loan agreement.

Private Loan Projects Previously Funded

As of September 30, 2004, 336 private loans had been approved under the Renewable Resource Grant and Loan Program. A total of \$28,162,093 has been advanced, and \$569,246 is committed to projects that have not requested disbursements. Figure 8 lists the private loans that have been approved since October 2002. Loans have been used to finance projects involving new and refurbished irrigation systems, riprap, irrigation wells, and refurbishing private drinking water systems.

FIGURE 8 Private Loan Applications Approved Since October 2002

Contract Number	Loan Amount	Contract Number	Loan Amount
03-3413	\$ 92,225	04-3438	50,790
03-3414	61,500	04-3439	62,255
03-3415	19,000	04-3440	41,925
03-3416	85,000	04-3441	33,210
03-3417	200,000	04-3442	50,800
03-3418	49,785	04-3443	44,680
03-3419	40,640	04-3444	96,055
03-3421	71,120	04-3445	71,000
03-3422	47,750	04-3446	110,060
03-3423	69,310	04-3447	100,000
03-3424	66,765	04-3448	39,035
03-3425	48,745	04-3449	65,025
03-3426	147,320	04-3451	200,000
03-3427	106,390	04-3452	85,000
03-3428	56,895	04-3453	105,000
03-3429	82,585	04-3454	74,320
03-3430	106,680	05-3455	84,805
03-3431	120,605	05-3456	76,200
04-3432	126,425	05-3458	62,500
04-3433	163,120	05-3459	94,400
04-3435	85,200	05-3460	89,250
04-3436	68,000		
04-3437	40,640	TOTAL	\$ 3,592,010

CHAPTER V

Emergency Grants And Loans

Application Administration and Project Review Procedures

In addition to the regular funding available during each Renewable Resource Grant and Loan Program funding cycle, limited funds are also available for immediate projects necessary to address qualified emergencies. These funds are reserved to help finance emergency projects otherwise eligible for grant or loan funding, which, if delayed until legislative approval could be obtained, would result in substantial damages or legal liability for the project sponsor.

Applications for emergency grants and loans are accepted by DNRC from public entities when an emergency occurs. No application fee is required.

Project Solicitation

No formal solicitation for applications is conducted. Engineering firms and other consultants likely to be involved with eligible emergency projects have been informed that emergency funds exist. During presentations to provide information relative to public grant and loan programs, the availability of emergency funding is also discussed.

To request funds, applicants are required to submit a letter containing:

- a description of the problem;
- a statement of when the problem occurred;
- the proposed solution;
- cost estimates with documentation; and
- documentation of the community's financial condition and ability to otherwise pay for the proposed repairs.

Application Review

As with funding for other renewable resource projects, emergency funds must be used for projects that enhance renewable resources in the state through conservation, development, management, or preservation; for assessing feasibility or planning; for implementing renewable resource projects; or for similar purposes approved by the legislature. All applications submitted are evaluated for completeness. Sponsors for those applications needing more documentation are notified and asked to submit additional material immediately.

Requests for emergency funds are reviewed by DNRC staff. DNRC's engineer investigates the problem to determine feasible alternatives. The project is evaluated to determine its eligibility for funding under the Renewable Resource Grant and Loan Program. Projects must meet the statutory requirements of 85-1-605 (4), MCA as a minimum to merit further consideration. Engineers and technical experts from other state agencies may be solicited for technical opinions, guidance, and information.

Funding Recommendations

As discussed in Chapter I, statute allows DNRC to request up to 10 percent of the grant funds available each biennium to fund emergency projects. DNRC typically requests \$125,000 for emergency grants. DNRC will request an additional \$125,000 during the 2005 legislative session to fund emergency grants for the 2007 biennium.

Funding recommendations are made on a case-by-case basis within the constraint of available funding. As information is gathered and documented, a staff report with funding recommendations is written and presented to DNRC's director for an official decision as to whether the project should receive emergency grant or loan funding. A maximum of \$30,000 in emergency grant funding is typically placed on an individual

project; the limited total amount of funding available each biennium dictates close management of funding limits for each emergency project.

Project Management

Based on the decision of DNRC's director, the sponsor is notified of the status of its emergency grant or loan request. If successful, the applicant and DNRC enter into a formal agreement, and the project is managed in the same manner as other grant and loan projects funded by the Renewable Resource Grant and Loan Program.

Emergency Grant and Loan Applications

Each emergency grant request submitted is reviewed by DNRC staff and, based on staff recommendation, is approved or denied for funding by DNRC's director. Total funding for all emergency grants may not exceed the legislative biennial appropriation for emergency projects under the Renewable Resource Grant and Loan Program. A total of \$10,000,000 per biennium is available for emergency loans. No emergency grant may be funded in excess of the biennial appropriation less the total of all emergency grants funded previously during the biennium.

Authorized Emergency Loan Projects

There were no emergency loan applications received during 2003 and 2004.

Authorized Emergency Grant Projects

In 2003, the legislature authorized \$125,000 for emergency grants. During the reporting period (October 1, 2002, to September 30, 2004), funded emergency grant applications have included the following:

Ingomar Water District

RRG-04-1214

\$28,000 Emergency Grant

The Ingomar Water District has experienced drought-induced water shortages and has been hauling water from Forsyth during the summer months for several years. Rosebud County provided the community with a new well, and the district received a \$28,000 emergency grant to complete the well and install a small-diameter water line and electrical power to the wellsite. A loan from the Montana Board of Investments completed the \$60,000 project budget.

CHAPTER VI

Summary of Active Grants to Public Entities

Due to a state fiscal problem, there was a shortage in the Renewable Resource Grant and Loan Program fund for FY04. The first 20 legislatively ranked projects were contracted in FY04. The remainder of the funded projects were contracted in FY05. The status of all projects authorized, October 1, 2002, through September 30, 2004, is reported here. Project status is reported in three categories: completed, active, and authorized but not executed.

Within each of these categories, projects are listed alphabetically by the name of the grant recipient.

Grant Projects Completed Since October 1, 2002

Bitter Root Irrigation District

Irrigation System Water Use and Water Quality Improvements Phase I

RRG-00-1103

This grant was contracted in May 2000 for \$99,650 to complete a water conservation plan, install four broadcrest weirs and eight water measurement monitoring sites, install a remote control systems at the Lost Horse and Rock Creek sites, rehabilitate Rock Creek diversion riprap, line 1,000 feet of canal and measure the results, complete a water user guide and public information program, and install a remote electronic monitoring and control base station at district headquarters to monitor flow at water measurement sites and allow remote control of inlet headgates at the main canal. The project was completed in March 2003 and all funds were expended

Carbon Conservation District

Whitehouse Canal Company Reorganization

RRG-02-1153

A \$57,200 grant was authorized by the legislature in 2001. A grant agreement was executed in August 2001. The purpose of the project was to upgrade facilities of the Whitehouse Canal Company irrigation system. This project was completed in June 2004. A total of \$49,998.63 was disbursed.

Cascade County Conservation District

Sun River Valley Ditch Company Water Conservation and Water Quality Improvements

RRG-02-1154

A \$99,230 grant was authorized by the legislature in 2001. A grant agreement was executed in August 2001. All funds were used to improve overall irrigation efficiency in the area served by the Sun River Ditch Company and to improve water quality and quantity in the Sun River and its tributaries. The project was completed in September 2003.

Clyde Park, Town of

Water System Improvement Project

RRG-02-1141

The Town of Clyde Park was authorized a \$100,000 grant by the 2001 Legislature to replace water distribution lines, build a new water storage tank, install system-wide water meters and develop two new wells. The project was completed in 2003, and all funds were expended.

Deer Lodge, City of

Clark's Fork River Water Quality Protection Project

RRG-02-1163

The city was authorized a \$100,000 grant by the 2001 Legislature to replace a deteriorated sewer main that crosses under the Clark's Fork River within the city limits. In addition to this funding, the community also received a \$200,000 EPA grant to help fund the \$400,000 project. The project was completed in 2004.

**East Missoula Sewer District
Wastewater Treatment and Collection System
RRG-00-1104**

East Missoula Sewer District received a \$100,000 Renewable Resource grant in 1997 to design and construct a centralized wastewater collection and treatment system. Final engineering determined the best alternative to be the construction of a collection system and connection to the City of Missoula wastewater system. Construction was successfully completed late in 2003.

**Ekalaka, Town of
Water System Improvement
RRG-00-1119**

A \$100,000 grant was authorized by the 1999 legislature. A grant agreement was executed in March 2000. The purpose of the project was to drill a new water supply well for the town. The project was completed in June 2003. A total of \$100,000 was disbursed.

**Eureka, Town of
Wastewater Collection, Treatment & Disposal Improvements
RRG-01-1127**

The 1999 Legislature awarded the town a \$100,000 grant to replace and expand its wastewater collection system and to modify its existing treatment system. The project was completed in phases beginning in 2001. The project was completed in 2003.

**Fort Shaw Irrigation District
Water Quantity and Quality Improvement Project
RRG-98-1060**

A \$100,000 grant was authorized by the legislature in 1997. A grant agreement was executed in September 1997. The purpose of the project was to improve facilities of the irrigation district to conserve water. This project was completed in January 2003. The full \$100,000 was disbursed.

**Frenchtown Irrigation District
Irrigation System Water Use & Water Quality Improvements
RRG-00-1110**

A \$32,400 grant was authorized by the legislature in 1999. A grant agreement was executed in November 1999. Funds were used to complete improvements to the Frenchtown Irrigation District facilities and install water conservation and water quality improvement measures. Specifically the project completed a water conservation plan; installed three broadcrest weirs; replaced the Mill Creek and O'Keefe Creek radial gates; replaced the Houle Creek, M-8, Louiselle Lane, Boyer, and Primo headgates; repaired the Houle Creek headgate; and published a water user guide. The project was completed in October 2002 and all funds were disbursed.

**Glasgow Irrigation District
Vandalia Diversion Dam Rehabilitation
RRG-01-1125**

A \$56,000 grant was authorized by the legislature in 1999 for Phase I of the repair of Vandalia Diversion Dam. The grant agreement was executed in May 2002. This project was completed in 2003.

**Glasgow Irrigation District
Vandalia Diversion Dam Rehabilitation Phase II North Bridge Pier
RRG-02-1184**

A \$100,000 grant was authorized by the legislature in 2001 for phase 2 of the Vandalia Diversion Dam rehabilitation. The grant agreement was executed in May 2002. This grant was for the design, permitting, demolition and removal of corroded and/or deteriorated material, splicing of reinforcing steel and preparation for replacement of concrete on the north bridge pier. Construction was completed in 2004.

**Hebgen Basin/West Yellowstone Refuse District
Municipal Solid Waste Composting Facility
RRG-00-1122**

The district was awarded a \$100,000 grant in 1999 for preliminary engineering associated with the design of a solid waste composting facility to be constructed near West Yellowstone. The \$4.3 million project bid in the summer of 2002 and was completed in 2003.

**Hill and Liberty County Conservation Districts
Water Resource Evaluation of the Sage Creek Watershed
RRG-98-1074**

A \$40,622 grant was authorized by the legislature in 1997. A grant agreement was executed in June 1998. Funds were used to collect baseline information in the Sage Creek watershed for the purposes of watershed planning, water-resource assessment, and effecting change in land-use management practices. Information gathered by this project will be used to promote local efforts to protect the watershed through improved water quality. The project was completed in fall 2002 and all funds were disbursed.

**Hobson, Town of
Community Water Well
RRG-02-1164**

In 2001, the town received a \$50,000 grant to help fund the construction of a 1,400 foot community well at the fire station. In addition to providing water to local residents, farmers, and ranchers, the purpose of the well was to determine the availability of water for a community water system. The well and associated facilities were designed and approved in 2002 and were constructed in 2003. They are now in operation with water quality issues still being addressed.

**Lewis & Clark Water Quality Protection District
Helena Area Groundwater Quality Monitoring Network
RRG-00-1114**

A \$100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in January 2000. Funds were used to establish a ground water quality and quantity-monitoring network in the Helena valley. The project provided the means for the Lewis and Clark County Water Quality Protection District to collect and maintain comprehensive, scientific baseline data that will give citizens, planners, commissioners, and other decision-makers information they need to form policies and make appropriate land-use management decisions for responsible growth in the Helena area. Through continued water level measurements and water-quality sampling from appropriately sited and properly constructed monitoring wells, the water quality district can continue to monitor the local groundwater aquifers for the protection of public health and economic well-being of Helena area citizens. The project was completed in fall 2002 and all funds were used.

**Malta Irrigation District
Dodson Diversion Dam Assessment and Rehabilitation Project
RRG-00-1099**

The district received a \$100,000 grant in 1999 to assess the condition of Dodson Diversion Dam and recommend and design improvements. The district contracted with a Great Falls firm to perform an engineering evaluation of the aging structure. Construction began late in 2003 and was completed in 2004.

**Montana Bureau of Mines and Geology
Groundwater Protection and Education for Rural Montana Schools
RRG-98-1079**

A \$49,899 grant was authorized by the legislature in 1997. A grant agreement was executed in June 1998. Funds were used to protect groundwater supplies through an education approach in Montana's primary and secondary school systems. This was accomplished by having educators and students, in conjunction with MBMG personnel, develop a wellhead protection plan for their school well. The program was a unique approach that required an interdisciplinary effort and achieved active student participation. Primary and secondary school students learned basic scientific principles and related them to the area in which they live. Plans were completed for Canyon Creek, Harrison, Lincoln, and Ramsay schools. All funds were expended and the project was completed in fall 2002.

**Montana Department of Natural Resources and Conservation
Nevada Creek Dam Rehabilitation Project
RRG-02-1161**

In 2001, DNRC received a \$100,000 grant for the design of improvements to Nevada Creek Dam in Powell County. An engineering firm was selected to design and prepare bid documents for improvements identified by the department's engineering staff. Work began in 2002 and construction was completed in 2004.

**Nashua, Town of
Wastewater System Improvements
RRG-02-1172**

A \$100,000 grant was authorized by the legislature in 2001 for the design and construction of a new three-cell lagoon system, a non-discharging wastewater storage and irrigation system, and the design and rehabilitation of an existing lift station. A grant agreement was executed in October 2001. The project was completed in the fall of 2003.

**Neihart, Town of
Water Distribution System Improvements Project
RRG-03-1187**

The town was authorized a \$76,770 grant for water distribution system improvements by the 1999 Legislature. Specific improvements consist of the installation of water meters in an effort to conserve water and reduce costs associated with water treatment. An engineer was procured to design the project, and the project bid and was constructed in 2004.

**Park City/County Water and Sewer District
Wastewater System Improvements
RRG-02-1150**

A \$100,000 grant was authorized by the legislature in 2001 for the design and construction of a new lift station, a new three-cell lagoon, and a treated wastewater disinfection and discharge system. A grant agreement was executed in July 2001. The project was completed in December 2002 and all funds were expended.

**Petroleum County Conservation District
Musselshell River Assessment & Monitoring Plan
RRG-00-1117**

A \$47,050 grant was authorized by the legislature in 1999. A grant agreement was executed in February 2000. Funds were used to improve the water quantity, water quality, and health of riparian areas within the Lower Musselshell River EQIP priority area. Also, landowners in the EQIP priority area were provided water quality and water measuring devices and these landowners were educated on irrigation water management techniques and water quality improvement measures. The project was completed in fall 2002 and all funds were spent.

**Phillips County-Green Meadows Water and Sewer District
Water System Improvements
RRG-04-1211**

A \$100,000 grant was authorized by the legislature in 2003 for the design and construction of water distribution system improvements, the connection to the City of Malta's water system; and installation of water meters on all residential and commercial water accounts. The project was contracted in December of 2003. The project was completed in June of 2004.

**Phillips County-Whitewater Water and Sewer District
Wastewater System Improvements
RRG-02-1179**

A \$100,000 grant was authorized by the legislature in 2001 for the design and construction of a new wastewater collection system, wastewater treatment facility, and the reclamation of the existing septic tank systems. A grant contract was completed in December 2001, and construction was complete in October of 2003. All funds were expended.

**Rae Water and Sewer District
Wastewater System Improvements Project
RRG-01-1128**

In 1999, the district received a \$100,000 grant for the design and construction of a wastewater treatment facility to replace its lagoon. Designed in 2001, bids for the project exceeded available funding. Modifications to the initial design were made in 2001 and the project was rebid. A Bozeman contractor completed construction in 2004.

**Richey, Town of
Water System Improvement
RRG-02-1158**

A \$100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in August 2001. The purpose of the project was to drill a new municipal well for the town. This project was completed in April 2003. A total of \$89,940 was disbursed.

**Roosevelt County Conservation District
Dry Prairie Water Supply Project
RRG-00-1092**

An \$82,109 grant was authorized by the 1999 legislature. A grant agreement was executed in August 1999. The purpose of the project was to conduct an environmental assessment for the Dry Prairie water supply project. The project was completed in December 2002. A total of \$82,109 was disbursed.

**Ruby Valley Conservation District
Lower Ruby Valley Groundwater Management Plan
RRG-02-1152**

A \$73,764 grant was authorized by the legislature in 2001. A grant agreement was executed in August 2001. Grant funds were used to develop a planning tool to protect, preserve, and conserve groundwater and surface water resources in the lower Ruby Valley. The project involved three primary goals 1) compiling watershed data and conducting limited field testing/analysis, 2) developing a comprehensive data report and groundwater management plan, and 3) developing watershed scale recommendations for future water resource conservation and protection. In May 2003 the project was completed and the District approved a final groundwater management plan. All funds were expended.

**Sheridan County Conservation District
Groundwater Study
RRG-00-1102**

A \$99,700 grant was authorized by the legislature in 1999 Legislature. A grant agreement was executed in June 2000. The purpose of the project was to study groundwater in Sheridan County with regard to irrigation potential. The project was completed in June 2004 and \$99,700 was disbursed.

**Sheridan, Town of
Water System Improvements
RRG-04-1198**

A \$100,000 grant was authorized by the legislature in 2003 for the design and construction of a water distribution system, water service replacements from the main to the edge of the public right of way and the installation of a new water meter in the pump house. This project was completed in June 2004.

**Stanford, Town of
Wastewater System Improvements
RRG-02-1167**

A \$100,000 grant was authorized by the legislature in 2001 for design and construction of sewer pipe replacement, and the design and construction of an upgrade from a one-cell treatment lagoon to a three-cell lagoon system. Construction was completed in 2004.

**Sweet Grass Water and Sewer District
Wastewater System Improvements Project
RRG-01-1130**

The district received a \$100,000 grant in 1999 to improve and expand its wastewater treatment facility to comply with state and federal treatment standards. It obtained additional grant funding through the

Community Development Block Grant Program in 2000. Design was completed and the project bid in 2001; a contract was awarded and construction begun. In early 2002, the construction contract was terminated due to ongoing construction conflicts, and a settlement was made with the contractor. The project rebid in the summer of 2002, and construction was completed in 2003.

Teton County Conservation District
Irrigation Methods & Herbicide Transport to Groundwater
RRG-00-1100

A \$100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in September 1999. Funds were used to develop recommendations for irrigation practices to minimize herbicide contamination of groundwater. Data was collected from two test fields representative of farming practices on the Greenfields Bench. The primary difference between the two test fields was the irrigation method (sprinkler versus flood). Monitoring wells were installed and water samples collected in early spring, prior to herbicide and irrigation water application. Following application of an herbicide, the fields were monitored and sampled throughout the early part of the irrigation season. The data was evaluated to quantitatively and qualitatively determine how much of the applied chemical was transported to groundwater. The project was completed in fall 2002 and all funds were used.

Tin Cup-Ravalli County Water and Sewer District
Tin Cup Lake Dam Improvements Project
RRG-00-1108

In 1999, the district received a \$25,000 grant to monitor the spring 1999 filling of Tin Cup Reservoir following extensive repairs by the U.S. Forest Service and to construct a floating manway from the dam to the outlet structure. Modifications to the outlet works and other improvements were completed in 2004.

Virginia City, Town of
Wastewater Treatment System
RRG-02-1177

A \$100,000 grant was authorized by the legislature in 2001 for the design and construction of a new two-cell lagoon system for treatment and winter storage, the reclamation of the old ponds, and the design and construction of a spray irrigation discharge system. The project was contracted in October 2001. Construction was completed in 2004.

West Crane Irrigation District
West Crane Irrigation Project
RRG-01-1134

A \$100,000 grant was authorized by the legislature in 1999 to complete a preliminary design for the West Crane Sprinkler Irrigation Project in Richland County. The project was contracted in July 2001, completed in January 2003, and all funds were expended.

Whitefish, City of
Wastewater Aeration System Improvements & Lagoon Solids Removal Project
RRG-02-1144

A \$100,000 grant was authorized by the 2001 Legislature. A grant agreement was executed in July 2001. Funds were used to improve effluent quality by making improvements to the wastewater treatment facility aeration system and through the removal and disposal of sludge, which currently takes up valuable volume in the lagoon cells. Improvements were made and sludge removal completed in fall 2002, and all funds were expended.

Whitefish County Water and Sewer District
Revisit to the Limnology of Whitefish Lake
RRG-02-1169

A \$100,000 grant was authorized by the legislature in 2001. Funds were used to provide a current analysis of the trophic status of Whitefish Lake, compare current limnology measures to data obtained in the baseline research conducted in 1982-1983, and elevate public awareness by dissemination of information regarding planning, methodology, execution, and analysis of data obtained during the project. The project was completed in April 2004 and all funds were spent.

Active Grant Projects

Ashland Water and Sewer District Improvement of Wastewater Facilities RRG-02-1182

A \$100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in February 2002. The purpose of the project is to improve the sewage lagoon system for the town of Ashland. This project is approximately 10 percent complete and \$66,576.13 has been disbursed.

Beaverhead County Big Hole Watershed Management Project RRG-02-1166

A \$75,000 grant was authorized by the legislature in 2001. A grant agreement was executed in September 2001. A total of \$50,932 has been disbursed. The purpose of the project is to support community-based water management in the Big Hole basin. Specific objectives are the Big Hole Watershed Committee operations (100 percent complete), water resource data collection (100 percent) complete, and hydrologic modeling (40 percent complete). The technical and final reports will be completed by March 2005.

Bitter Root Irrigation District Irrigation System Water Use and Water Quality Improvements – Phase II RRG-04-1220

A \$100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in April 2004. A total of \$1,699 has been disbursed. Funds are being used to accomplish five tasks. Task one is adding flow sensors and radio units to up to eight calibrated flow measurements sites along the BRID canal. Task two is to line up to 5,000 feet of the BRID canal. Task three is an evaluation of options for the proposed Dry Gulch Siphon to replace three miles of leaking ditch including ditch leakage measurements, ditch lining, and siphon construction. The Dry Gulch Siphon evaluation will include costs, easements, feasibility, and comparison to other alternatives. Task four is to design a refurbishment of the Skalkaho Creek diversion structure to be completed in Phase III. Task five is completion of work on the Lost Horse Diversion Dam rock v-weir begun in Phase I. Project completion is expected in December 2005.

Buffalo Rapids Irrigation District Refit of Glendive Pumping Plant RRG-04-1193

In 2003, the district received a \$100,000 grant authorization to design and construct improvements to the Glendive Pumping Plant. Included are the replacement of an 84-inch buried discharge manifold; the rebuild of two pumps and motors; and upgrades to telemetry and control systems. Work is currently in progress.

Canyon Creek Irrigation District Canyon Lake Dam Rehabilitation Project RRG-02-1171

In 2001, the district received a \$100,000 grant authorization to make structural improvements necessary to bring Canyon Lake Dam, a high hazard wilderness dam west of Hamilton, into compliance with dam safety standards. In 2002, the district hired a geotechnical engineering consultant to evaluate options for both Canyon Lake Dam and Wyant Lake Dam, a smaller dam located higher than Canyon Lake Dam in the same cirque or drainage basin. It was decided to make improvements to Canyon Lake Dam that would bring it into dam safety compliance and increase the storage capacity of Canyon Lake. Because the storage capacity of Canyon Lake is being increased, no work is planned for Wyant Lake Dam, and the level of that lake will be kept at natural levels. The Canyon Lake Dam Improvements Project bid in the summer of 2004 and is scheduled for completion in the fall of 2004.

Canyon Creek Irrigation District Wyant Lake Dam Rehabilitation Project RRG-02-1170

Wyant Lake Dam is located immediately upstream from Canyon Lake. Classified a high hazard dam, the structure must either be rehabilitated or removed from service. In 2001, the district was authorized a \$100,000 grant to be used in coordination with the Canyon Lake grant reported above to bring the district's facilities into compliance with dam safety standards and maintain a storage facility for the system. It was

decided to make improvements to Canyon Lake Dam, as described above, and to remove Wyant Lake Dam from service. This grant, along with the grant for Canyon Lake Dam, is being utilized to make improvements to Canyon Lake Dam including spillway modifications to the existing spillway and the construction of a new emergency spillway. This work will increase the storage capacity for the district's combined storage facilities and bring them into compliance with dam safety requirements.

**Charlo Sewer District
Wastewater Treatment and Collection
RRG-05-1236**

A \$100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in September 2004. No funds have been disbursed. Funds will be used to build a new lift station, construct a new aerated lagoon system with storage, and construct a wetlands system with a periodic discharge that uses the current cell for winter storage. The collection main from town to the new lift station will be replaced. There were delays in putting together the final project funding, however, Rural Development has furnished a loan/grant package that completed the funding required. Also, there were delays caused by complications in site acquisition, and a change in the discharge permit parameters, which required a change in the preliminary engineering review. Construction is planned for summer 2005.

**Charlo Water District
New Water Well
RRG-02-1143**

A \$100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in July 2001. \$90,000 has been disbursed. Grant funds are being used for a new well to provide adequate water for the water users under all conditions. The Charlo Water Well project was delayed because the Charlo Water District could not obtain a water right for the new well. Water rights were not being issued by the DNRC on the Flathead Reservation because of a water right jurisdiction dispute between DNRC and the Confederated Salish and Kootenai Tribes. With the passage of HB 683 during the 2003 legislative session, Charlo Water District was able to proceed with drilling a new well in February 2004. Remaining work on the water supply system will be completed by the end of 2004.

**Chinook Division Joint Board of Control
Fresno Dam Gate Leaf Seal Replacement Project
RRG-04-1196**

In 2003, the board received a \$100,000 grant authorization to provide its share of the cost to replace the seals and frames on each of two outlet gates on Fresno Dam. The U.S. Bureau of Reclamation, owner of the dam, bid the project in 2004, with completion scheduled for the fall of 2004.

**Conrad, City of
Raw Water Intake & Pump Station Improvements
RRG-04-1218**

A \$100,000 grant was authorized by the legislature in 2003 for the design and construction of a new intake and intake backwash, a new pump station and wet well, an intake line and transmission line, and the extension of an overhead power line. The project is being done in three phases. Phase I is the design and construction of the Lake Frances intake, phase II is the design and construction of the transmission line, and phase III is the design and construction of the pump station. Phase I is nearing completion. All phases of the project are scheduled to be complete in 2006.

**Dawson County
Yellowstone River Floodplain Management
RRG-04-1221**

A \$75,000 grant was authorized by the legislature in 2003. A grant agreement was executed in April 2004. No grant funds have been disbursed. Funds are being used to update floodplain regulations in Dawson County by adopting a new Flood Insurance Study. A hydrological analysis, floodplain assessment, floodplain delineation, and new flood hazard maps will be made covering 15 miles of the Yellowstone River in and around Glendive. A public participation and data adoption process will take place, and the Flood Insurance Study and maps will be published and made available to the public. The project goal is to help county officials make informed floodplain management decisions about growth and development, and protect and preserve the natural resources of the floodplain itself. LIDAR (lazar radar), bathymetry, aerial photography, and other data have been obtained. Project completion is planned for December 2007.

**Flathead Basin Commission
Ashley Creek Headwaters Restoration
RRG-04-1219**

A \$99,700 grant agreement was authorized by the legislature in 2003. A grant agreement was executed in March 2004. \$293 has been disbursed. Funds are being used for restoration of the Ashley Creek headwaters above Smith Lake. The Ashley Creek watershed area is about 20 miles west of Kalispell, Montana. Primarily "soft" stream restoration techniques will be used to achieve the restoration goals of improving water quality, reducing stream bank erosion and soil loss, and enhancing the westslope cutthroat trout fishery. Restoration activities will include: revegetating riparian zones, fencing riparian areas, implementing grazing management plans, making channel improvements, installing water gaps, reinforcing critical fish barriers for the cutthroat trout, installing brush bundles, stabilizing stream banks, regenerating aspens, project monitoring, oversight, and producing a feasibility report on potential road relocations and building. Project completion is expected by the end of 2006.

**Flathead Basin Commission
Implementation of Voluntary Nutrient Reduction Strategy
RRG-02-1165**

A \$100,000 grant was authorized by the legislature in 2001. A grant agreement for \$99,697 was executed in September 2001. The overall project is 95 percent complete and \$90,289 has been disbursed. Funds were used to continue implementation of the Voluntary Nutrient Reduction Strategy and fund critical nutrient reduction projects that will help meet the long-term water quality needs of Flathead Lake. Specific activities included the TMDL action plan, watershed group facilitations and education, new opportunity research and development, VNRS coordination, and grant writing. Work remains on compiling the final report, which will be completed by the end of 2004.

**Fort Belknap Irrigation District
Sugar Factory Lateral Project
RRG-05-1231**

A \$100,000 grant was authorized by the legislature in 2003 for the improvements to the Sugar Factory Lateral. The project was contracted in July of 2004. This is phase I of a two phase project. The project is to install a pipeline to enclose the Sugar Factory Lateral the borders the City of Chinook. The first phase on this project is anticipated to be complete in the spring of 2005.

**Fort Shaw Irrigation District
Water Quantity and Quality Improvement Project
RRG-04-1213**

A \$89,122 grant was authorized by the legislature in 2003. A grant agreement was executed in October 2003. No grant funds have been disbursed. The purpose of the project is to improve facilities of the irrigation district to conserve water. No work has started on this project.

**Gallatin Local Water Quality Protection District
A Dedicated Monitoring Well Network for the Gallatin Valley
RRG-04-1225**

A \$50,000 grant was authorized by the legislature in 2003. A grant agreement was executed in May 2004. No funds have been disbursed. Funds are being used to drill and construct groundwater-monitoring wells. These new wells, in conjunction with existing wells monitored by MBMG, will create a dedicated monitoring network for the Gallatin Valley. Also, funds will be used to collect water quality samples and measure initial water levels to establish baseline data for the new well sites. As part of this grant project, a long-term monitoring plan for the well network will be developed in cooperation with MBMG. The project is expected to be finished by the end of March 2006.

**Glen Lake Irrigation District
Therriault Creek Point of Diversion Infrastructure and Fish Habitat Project
RRG-02-1185**

A \$100,000 grant was authorized by the legislature in 2001 for the design and construction of a replacement diversion in Therriault Creek to be completed with environmental improvements. The grant agreement was executed in May 2002. A total of \$13,000 in grant funds have been expended in the design of the project.

The project was bid November 2003 and the bids came in too high. The project is expected to be rebid this fall and construction to be completed in December of 2004.

Hamilton, City of
Water System Improvements Project
RRG-04-1199

In 2003, the city received a \$100,000 grant authorization as part of the funding package for a large water system improvements project. Included in the project are a new water storage reservoir, two new wells, a new boost pump station, and distribution line replacement in downtown Hamilton. The project bid in 2004 and is under construction, with completion scheduled for early fall 2004.

Hill County
Beaver Creek Dam Rehabilitation Project
RRG-02-1147

The county received a \$75,000 grant in 2001 for an engineering investigation to identify upgrades to Beaver Creek Dam necessary to bring it into dam safety compliance. In 2001, an engineering firm was selected to study the dam, and final recommendations were made in 2002. Because the proposed improvements have not been approved by the regulating agency, NRCS, work has not begun. Minor improvements identified in the 2002 study and authorized for grant reimbursement will be completed in 2004.

Hinsdale Water and Sewer District
Wastewater System Improvements
RRG-03-1189

A \$100,000 grant was authorized by the legislature in 2001 for the design and construction of a new wastewater collection system and a package wastewater treatment plant. The project was contracted in November 2002. The project is slated for completion in December 2004.

Hot Springs, Town of
Water Systems Improvement
RRG-02-1149

A \$100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in July 2001. \$90,000 has been disbursed. Funds are being used to more efficiently utilize the water being pumped into the distribution system, and to reduce the public health and safety risks associated with an aged, inadequately sized distribution system in dilapidated condition. Additional funding from Rural Utility Services was obtained for this project, eliminating the need for project phasing. The Town of Hot Springs has awarded the construction contract to LHC Construction. The project proceeded in May 2003. Construction was suspended during winter 2003-2004 and resumed April 2004. There were delays in securing other funding and getting the street repair inclusion approved. The project is planned for completion by the end of 2004.

Hysham Irrigation District
Streambank Stabilization to Protect Irrigation Intake
RRG-04-1226

A \$50,000 grant was authorized by the legislature in 2003. A grant contract was executed in June 2004. No grant funds have been disbursed. The purpose of the project is to install structures to stabilize and protect the streambank at the irrigation system intake. No work has started on this project.

Judith Basin County
Geyser Water System Improvements
RRG-04-1195

A \$100,000 grant was authorized by the legislature in 2003 for the installation of water meters on all service connections, the design and construction of water distribution system improvements, installation of a new elevated steel water tank, and new wells. Grant funds will be used primarily for final engineering. The project is currently in the process of drilling test wells to find a good water source. Once a good water source is found, the project will finalize engineering plans. The project is scheduled for completion in 2005.

**LaCasa Grande Water and Sewer District
Water Supply and Distribution System
RRG-02-1183**

A \$100,000 grant was authorized by the legislature in 2001 for the design and construction of a new water well, new water tank, pump station and the installation of water meters. The grant agreement was executed in May 2002. Construction is now complete, and a final report is expected by the end of 2004.

**Lewis and Clark County Water Quality Protection District
Groundwater Sustainability in the North Hills Area, Helena, Montana
RRG-04-1202**

A \$50,000 grant was authorized by the legislature in 2003. A grant agreement was executed in June 2004. No funds have been disbursed. The project goal is to collect geologic and hydrologic data and present interpretations needed for appropriators, regulators, and homeowners to evaluate the management of groundwater with the North Hills. Data will also be used to construct a water budget for the North Hills aquifer to help understand what portion of the water budget is currently appropriated to water users. Specifically this will be accomplished by creating small scale geologic mapping of faults, joints, and fractures; establishing a network of monitoring wells that can be sampled for water level and water quality; and quantifying sources of groundwater recharge and discharge to the extent possible. Project completion is scheduled for July 2006.

**Lewis and Clark Conservation District
Willow Creek Erosion/Water Quality Improvement Project
RRG-02-1157**

A \$100,000 grant was authorized by the legislature in 2001 for the stabilization of stream banks in the game range segment of the Willow Creek system, and the improvement of water quality. A grant agreement was executed in August 2001. The project received a grant extension to complete an extra segment of work. Construction is now complete, and a final report is expected by the end of 2004.

**Lower Willow Creek Drainage District
Lower Willow Creek Dam Assessment and Rehabilitation Project
RRG-02-1148**

In 2001, the district received a \$100,000 grant and a \$1.35 million loan authorization to determine and mitigate seepage problems occurring at Lower Willow Creek Dam in Granite County. A well monitoring program and associated remote monitoring equipment were installed in 2001, and seepage flows were monitored to determine location and probable cause. It was determined that internal grouting was necessary to correct the problem. The project bid in 2004 and is scheduled for completion late in 2004.

**Madison County Alder Water and Sewer District
Wastewater Collection and Treatment System
RRG-02-1173**

A \$100,000 grant was authorized by the legislature in 2001 for the design and construction of a gravity collection system, sewage lift station, new two-cell lagoon system, and a treated wastewater disinfection and discharge irrigation system. The grant agreement was executed in October 2001. Grant funds were used primarily for final engineering costs. The project is near completion, and \$95,000 of the grant has been expended.

**Malta Irrigation District
Replacement & Modification of Check Structures
RRG-04-1205**

A \$100,000 grant was authorized by the legislature in 2003 for the replacement of check structures within the district. The project was contracted in July 2004, and work on the new check structures will begin in the fall after irrigation season. Completion of the project is expected in 2006.

**Manhattan, Town of
Wastewater System Improvements
RRG-03-1188**

A \$100,000 grant was authorized by the legislature in 2001 for the design and construction of a collection system and lagoon with spray irrigation. The project was contracted in October 2002. The Montana Department of Environmental Quality's rules changed, resulting in the need to build a treatment plant instead

of a lagoon. The project has most of the collection system completed. The treatment plant is currently in the design phase and slated for construction in the summer of 2005. \$74,000 has been expended.

**Milk River Joint Board of Control
St. Mary Siphon Expansion Joint Replacement
RRG-04-1208**

A \$100,000 grant was authorized by the legislature in 2003 for purchase the materials needed to repair the Saint Mary's Siphons, including pipe segments and expansion contraction joints. The pipe and expansion joints are currently being manufactured. Installation is scheduled for the fall of 2004.

**Mill Creek Irrigation District
Mill Lake Dam Rehabilitation Project
RRG-04-1204**

In 2003, the district received a \$100,000 grant authorization for the construction of spillway and outlet works improvements to Mill Lake Dam, a high hazard dam located in the Selway-Bitterroot Wilderness west of Hamilton. Preliminary and final engineering is currently in progress with project construction scheduled for 2005.

**Missoula, City of
Rattlesnake Neighborhood Sewer Collection System
RRG-04-1206**

In 2003, the city received a \$100,000 grant authorization for the design and construction of a wastewater collection system to complete centralized sewer service in the lower Rattlesnake area of Missoula. The project is the focus of citizen protests and legal action against the city, prompted by the alleged failure of the city to allow public participation during the planning and environmental review stages of the project. Although the project is delayed, it is hopeful that construction will begin late in 2004 or in 2005.

**Missoula County
Mullan Road Corridor Sewer Project-Phase I
RRG-04-1197**

In 2003, the county received a \$100,000 grant authorization for the design and construction of a wastewater collection system to complete centralized sewer service in the Mullan Road area west of Reserve Street in Missoula. The project was the focus of citizen protests and legal action against the city, prompted by the alleged failure of the city to allow public participation during the planning and environmental review stages of the project. Despite delays, project construction is now in progress with completion scheduled in 2005.

**Montana Department of Agriculture
Monitoring Well Network to Assess Ag Chemicals
RRG-04-1210**

A \$100,000 grant was authorized by the legislature in 2003. A grant agreement was executed in September 2003. No grant funds have been disbursed. The purpose of the project is to drill new wells to assess agricultural chemical presence. This project is approximately 35 percent complete.

**Montana Department of Corrections
Rehabilitation of Prison Ranch Dam
RRG-04-1216**

In 2003, the Montana Department of Corrections received an \$80,000 grant authorization for the construction of a new spillway and stilling basin at Upper Taylor Dam, a high hazard earthfill dam on the prison ranch west of Deer Lodge. Work has been in progress since 2003, with labor and equipment being provided by prison inmates and students from the Anaconda Job Corps. The project is in progress with completion scheduled for the fall of 2004.

**Montana Department of Natural Resources and Conservation
North Fork of the Smith River Dam Rehabilitation Project
RRG-05-1230**

In 2003, DNRC received a \$100,000 grant for the construction of improvements to bring North Fork of the Smith River Dam into compliance with current dam safety requirements. Included are the design and construction of primary spillway improvements, the construction of a new emergency spillway, leveling of the

dam crest, and the installation of a new internal drain system to control seepage. Preliminary engineering is complete. Final design is scheduled to begin late in 2004, with construction to begin in 2005.

**Montana Department of Natural Resources and Conservation
Seepage Monitoring Project – DNRC Dams
RRG-04-1207**

A \$97,646 grant was authorized by the legislature in 2001. A grant agreement was executed in December 2003 and \$18,438 has been disbursed. Funds are being used to establish a seepage-monitoring program at four of the State's high hazard dams that either have surficial seepage problems or pose a potential for significant loss of life. These dams are Painted Rocks, Willow Creek, Cataract, and Yellowstone. This will be achieved by: installing wells and monitoring devices to determine if a serious seepage or stability problem is developing before it becomes an emergency; drilling a series of boreholes and installing an array of piezometers in each dam; conducting a soils investigation of embankment and foundation material to determine representative strengths; mapping the percent of the dam that is saturated; evaluating the effectiveness of existing seepage control devices (filters and drains); monitoring changes in water flowing through the dam; and conducting a baseline stability analysis using data collected. The project completion is scheduled for July 2005.

**North Powell Conservation District
Blackfoot River Habitat, Water Quality
RRG-04-1200**

A \$62,600 grant was authorized by the 2003 Legislature. A grant agreement was executed in July 2003. \$1,406 has been disbursed. Funds are being used to develop targets through the Montana Department of Environmental Quality Total Maximum Daily Load program to improve water quality; identify restoration projects; reduce soil loss on agricultural lands and logged areas through minimizing soil bank erosion and implementation of road BMPs; improve fishery and aquatic life habitat and recreation opportunities; and protect species of concern. These goals will be met by effective project management and administration, developing a basin-wide action plan, identifying water quality and restoration targets, coordinating restoration planning and implementation, writing grants to fund restoration, and promoting local participation in restoration efforts. Project completion is scheduled for December 2005.

**Pablo-Lake County Water and Sewer District
Water System Improvements Project
RRG-05-1234**

In 2003, the district received a \$100,000 grant authorization for the design and construction of an expansion to its existing wastewater treatment facility. The expansion project includes the construction of additional treated wastewater storage cells and expansion of the treated wastewater spray irrigation area. The project is currently being designed, with construction scheduled for 2005.

**Paradise Valley Irrigation District
Hillside Lateral
RRG-04-1224**

A \$100,000 grant was authorized by the legislature in 2003 for the purchase and installation of approximately 3,500 feet of pipe and appurtenances for four turnouts. The project will be completed in 2005.

**Park County
North Park County Water Resources and Management Plan
RRG-04-1201**

A \$75,000 grant was authorized by the legislature in 2003. A grant agreement was executed in July 2003. \$12,707 has been disbursed. Funds are being expended to collect and evaluate hydrogeologic data to develop a water resources protection and management plan for northern Park County. Objectives to accomplish these goals include: identify and evaluate groundwater and surface-water systems in the areas of rapid subdivision development; collect baseline groundwater and surface-water data in areas of potential coal bed methane development; and develop a water resource protection and management plan for northern Park County. This plan will be used by Park County and the Park Conservation District to manage subdivision developments north of Livingston, and to evaluate and manage potential coal bed methane development. Project completion is expected December 2005.

**Park County-Cook City Water District
Water System Improvements
RRG-04-1191**

A \$100,000 grant was authorized by the legislature in 2003 to design and construct new wells, a water distribution system, and a new buried steel water tank, and to install water meters on all connections. Currently the engineers on this project are drilling test wells to find an adequate water source. The construction season is very short in Cooke City's climate, so it is anticipated that construction will begin summer 2005. No funds have been expended to date.

**Power Teton County Water and Sewer District
Water System Improvements
RRG-05-1232**

A \$100,000 grant was authorized by the legislature in 2003 for the design and construction of a new water distribution system, a pre-sedimentation basin, and a new steel water tank. This is phase II of a two-phase project. The project was contracted in August of 2004. Completion is expected in 2005.

**Ramsay County Water & Sewer District
Water System Improvements
RRG-04-1203**

A \$100,000 grant was authorized by the legislature in 2003 for the design and construction of a water distribution system, new hydrants and valves, new wells, and the installation of water meters on all service connections and source supplies. The project was contracted in August of 2003. Currently there has been no progress on the project. Two debt elections have been held and both failed by a slim margin. It is anticipated that another debt election will be held in 2005.

**Richland County Conservation District
Groundwater Study
RRG-04-1217**

A \$50,000 grant was authorized by the legislature in 2003. A grant agreement was executed in December 2003. No grant funds have been disbursed. The purpose of the project is to study the potential for groundwater use in the Lower Yellowstone River Valley. No work has started on this project.

**Ryegate, Town of
Water System Improvements
RRG-05-1237**

A \$100,000 grant was authorized by the 2003 Legislature for the design and construction of a water distribution system, new fire hydrants, water meters, and a new water source. Currently the town is drilling test wells to find a water source. If potable water cannot be found from groundwater, then the town will review the options of taking water from the Musselshell River. Construction will take place in 2005.

**City of Scobey
Wastewater System Improvements
RRG-04-1209**

A \$100,000 grant was authorized by the legislature in 2003. A grant agreement was executed in August 2003. The purposed of the project is to upgrade wastewater facilities of the city. This project is approximately 20 percent complete, and \$24,139.97 has been disbursed.

**Sheaver's Creek Water and Sewer District
Water System Improvements Project
RRG-04-1212**

In 2003, the district received a \$100,000 grant authorization for the design and construction of improvements to its drinking water system. Included are distribution line replacement, water meter installations at all service connections, two new wells, and the construction of a 140,000-gallon water storage reservoir. Bid in 2004, construction is in progress with completion scheduled for 2005.

Sidney Water Users Irrigation District
Increasing Irrigation Efficiency
RRG-05-1238

A \$100,000 grant was authorized by the 2003 Legislature. A grant contract has been executed, design is underway, and construction should commence in spring 2005.

Stanford, Town of
Water System Improvements
RRG-04-1194

A \$100,000 grant was authorized by the legislature in 2003 to design and construct two new wells and rehabilitate the existing wells currently in service. The project also includes the design and construction of a new, elevated steel tank and a water distribution system. \$70,000 of the grant funds have been expended on final engineering. The project is scheduled for completion in 2005.

Stillwater County
Improving Soil Productivity and Water Quality through Land Use Changes
RRG-02-1140

A \$74,153 grant was authorized by the legislature in 2001. A grant agreement was executed in July 2001. \$59,357 has been disbursed. Grant funds are being used to reduce the encroachment of saline seep in the Lake Basin of south-central Montana, near the communities of Molt and Rapelje. Existing conditions are being documented, and recommendations developed for land-use to reclaim problem areas. The project will document the quality of existing groundwater resources and determine the best sources of potable water supplies for the livestock industry. Test drilling and well construction is complete. The inventory of existing water wells and springs and compilation of existing hydrogeologic data is complete. Work is continuing on final data analysis. Project completion is expected in December 2004.

Stillwater County
Yellowstone River Floodplain Management
RRG-04-1222

A \$75,000 grant was authorized by the legislature in 2003. A grant agreement was executed in March 2004 and \$53,860 has been disbursed. Funds are being expended to update floodplain regulations in Stillwater County by adopting a Flood Insurance Study in the project area. A hydrological analysis, floodplain assessment, floodplain delineation, and flood hazard maps will be made covering 15 miles of the Yellowstone River in and around Reed Point, Columbus, and Park City. A public participation and data adoption process will take place and the Flood Insurance Study and maps will be published and made available to the public. The project goal is to help county officials make informed floodplain management decisions about growth and development, and protect and preserve the natural resources of the floodplain itself. LIDAR (lazar radar), bathymetry, aerial photography, and other data have been obtained. Project completion is planned for December 2007.

Teton County
Burton Bench Aquifer Study
RRG-02-1178

A \$74,261 grant was authorized by the legislature in 2001. A grant agreement was executed in November 2001 and \$62,225 has been disbursed. Funds are being used to improve and/or protect the quality and quantity of surface and groundwater in the Muddy Creek and Teton River watersheds by utilizing data acquired in previous studies (without duplication of effort), to fully understand current conditions and changes that are occurring, and develop a menu of water resource management planning options for the community. Research has been completed. Technical and final reports will be completed by the end of 2004.

Troy, City of
Water System Improvements Project
RRG-05-1235

In 2003, the city received a \$100,000 grant authorization for the construction of a new water well, the construction of a new water storage reservoir, and distribution system improvements including water meters at each service connection. The project has been delayed in acquiring a suitable site for the well and reservoir. At the time of this writing, efforts are still underway and construction is scheduled for 2005.

**Upper/Lower River Road Water and Sewer District
Water and Sewer Systems Improvements Project
RRG-05-1233**

In 2003, the newly formed district that includes eight subdivisions and five mobile home parks adjacent to the City of Great Falls, received a \$100,000 grant authorization for the design and construction of a new water system and a new wastewater collection system. A debt election by the district passed in 2004, and work is proceeding toward the phasing and design of the project. Construction is scheduled to begin in 2005.

**Wisdom-Beaverhead County Sewer District
Wastewater Treatment Facility Replacement Project
RRG-02-1168**

In 2001, the district received a \$100,000 grant to address floodplain issues and begin preliminary design of a new sewer lagoon for the community of Wisdom. Additional funding for the project has been obtained, and the project is currently in the design stage with construction scheduled to begin in 2005.

**Worden-Ballantine Yellowstone County
Water System Improvements
RRG-04-1215**

A \$100,000 grant was authorized by the legislature in 2003 for the design and construction of a water distribution system, new well, improvements to the collection box, and improvements to the pump station. The project was contracted in November 2003. Land acquisition for the well is almost complete and then plans and specs will be submitted to DEQ for approval. No grant funds have been spent to date.

**Yellowstone County
Yellowstone River Floodplain Management
RRG-04-1223**

A \$75,000 grant was authorized by the legislature in 2003. A grant agreement was executed in April 2004 and \$70,000 has been disbursed. Funds are being used to update comprehensive floodplain regulations in Yellowstone County by adopting a new Flood Insurance Study. A hydrological analysis, floodplain assessment, floodplain delineation, and new flood hazard maps will be made from west county line to Pompey's Pillar, a distance of 45 river miles. A public participation and data adoption process will take place, and Flood Insurance Study and maps will be published and made available to the public. The goal of this project is to help county officials make informed floodplain management decisions about growth and development, and protect and preserve the natural resources of the floodplain itself. LIDAR (lazar radar), bathymetry, aerial photography, and other data have been obtained. Project completion is planned for December 2007.

Authorized Projects Not Yet Executed

**Cartersville Irrigation District
Sand Creek Siphon Rehabilitation
Terminated**

A \$20,000 grant was authorized by the legislature in 2003. The project sponsor decided in February 2004 not to use the grant. Project design and budget was not determined in time to use the funds and further investigation into the project is needed.

**Florence County Water & Sewer District
Wastewater System Improvements
Terminated**

The 2001 Legislature authorized a \$100,000 grant to construct a centralized sewer system and lift stations discharging to a lagoon treatment system, and build wetlands for effluent polishing and nutrient removal. Funding was cancelled due to public opposition to the project.

CHAPTER VII

Renewable Resource Project Planning Grants

Application Administration and Project Review Procedures

In 2003, the legislature authorized \$100,000 to facilitate the development of renewable resource projects. The intent of the program is to assist public entities in the completion of near-term project planning, including preliminary engineering reports and feasibility studies. Grants are provided to fund planning for renewable resource projects that conserve, manage, develop, or preserve Montana's renewable resources.

Applications for planning grants are accepted by DNRC from public entities on an "open-cycle" basis. No application fee is required. Grant awards are made on a first-come, first-served basis for qualified studies until funding is depleted. Each grant requires an equal cash match by the applicant, and grants are limited to \$10,000 per project.

Project Solicitation

No formal solicitation for applications is conducted. Engineering firms and other consultants likely to be involved with eligible studies have been informed that planning grant funding exists. During presentations to solicit applications for the regular public grant and loan program, the availability of planning grants is discussed.

To request funds, applicants are required to submit an application that describes the project, identifies the sources and uses of funding, and discusses the implementation schedule for the study.

From July 1, 2003, through September 30, 2004, DNRC awarded project planning grants to public entities for six public facility (water, wastewater, or solid waste) and five other renewable resource projects.

Application Review

As with funding for other renewable resource projects, planning grant funds must be used to plan projects that enhance renewable resources through conservation, development, management, or protection; for assessing feasibility or technical planning; or for similar purposes approved by the legislature. All applications submitted are evaluated for completeness and compliance with the intended purposes of the program.

Requests for planning grant funds are reviewed by DNRC staff. The scope of the project being considered is evaluated to determine its eligibility for funding under the Renewable Resource Grant and Loan Program. The proposed budget is analyzed to ensure compliance with required cash-match requirements of the program, and proposed costs are evaluated for feasibility.

Project Management

DNRC staff works closely with project sponsors and consultants during the planning stages of projects. For public facility studies, the applicant must contract with a registered professional engineer to prepare a Preliminary Engineering Report that satisfies the requirements of the Uniform Application Supplement for Montana Public Facility Projects. This application is accepted by all of the state agencies funding water, wastewater, and solid waste projects in Montana, and also by the Montana Rural Development Rural Utilities Service, formerly known as Farmers Home Administration. For all projects, draft submittals of planning documents prepared under this program are submitted to DNRC or other agency professionals for review prior to interim payments; a final report is required for review and approval prior to final payment.

Authorized Projects

In 2003, the legislature authorized \$100,000 for planning grants. Between July 1, 2003, and September 30, 2004, funded project planning grant applications included the following:

FIGURE 9 Project Planning Grants Approved During the 2005 Biennium

PROJECT SPONSOR	PROJECT TYPE	AMOUNT
Absarokee, Town of	Wastewater System Improvements	\$ 10,000
Dayton County Water & Sewer District	Wastewater System Improvements	10,000
Deer Lodge Valley Conservation District	Restoration Planning on Cottonwood Creek	10,000
Granite County Conservation District	Douglas Creek Reservoir- Phase II	5,330
Pondera County Conservation District	Dupuyer Creek Watershed Project	10,000
Rexford, Town of	Water System Improvements	4,670
Rudyard County Water & Sewer District	Wastewater System Improvements	10,000
Sheaver's Creek Water & Sewer District	Wastewater System Improvements	10,000
Woods Bay Homesites-Lake County Water & Sewer District	Wastewater System Improvements	10,000
Yellowstone County Conservation District	Canyon Creek Stream Restoration Project	10,000
Yellowstone Irrigation District	Ditch Improvements	10,000
		TOTAL \$ 100,000

2005

Montana Department of Natural Resources and Conservation



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